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"PEACE, GOOD-WILL TOWARD MEN."

Yule-tide, that season of rejoicing, which touches all mankind with its magic wand, turning hard hearts soft, austere natures tender, sullen dispositions cheerful and a selfish world generous, is with us once again, so let us rejoice and give thanks at the same time that the spirit of Christmas has survived to our day.

Of all the holidays set aside by man since the beginning of time not one would be missed so much as Christmas. Indeed, it were better that all other holidays be stricken from the calendar than to lose this one holiday, so rich in the spirit of all that is good. Out of the misty haze of history no other day stands in such bold relief and carries with it such a feeling of good-will toward men. Perhaps the reason is that most holidays of national importance to the several governments on earth are commemorative of some great victory won; and as victories are won only at the cost of life, most holidays are celebrations of death, while Christmas is a rejoicing over a birth.

Yule-tide, then, is Children's day, a day of light-hearted merry-making, with a heart full to overflow of happiness. Few of us can be happy when we know of want and suffering around us, therefore, the overflow of Christmas spirit finds its way to the Orphans' Home, the Hospitals and the poor quarters of the city, to see that the unfortunates in our midst have enough on this occasion to raise their spirits to the same tone pitch as our own. In this way orphans find homes; the poor are helped to better themselves, and the wards of hospitals are made bright for this short season. Old quarrels are made up, for who with a full heart can bear hatred toward his neighbor? Children write home to long neglected parents; prosperous brothers help their more unfortunate sisters and brothers under the leveling influence of Christmas time, which permits substantial aid being given without engendering a dependent spirit.

Then for the joys of Christmas! At break of day the children are astir, pillaging their stockings of the well-stocked treasures left by a generous

old Santa Claus from his limitless stock in the reindeer sledge, or dancing gleefully around a Christmas tree, lighted with glowing tapers which glitter and glisten on the tinsel and glass in the darkened tree-room. Then, out in the frosty air, wading through the snow, trying their new sleds or snow shoes, or perhaps running a race on skees. Breakfast, and the jingle of sleigh-bells plays a joyous accompaniment to their merry thoughts and cheerful laughter as they spin across the country behind a spanking team, with a hearty "Merry Christmas" to everybody. Back again in time for dinner, they sit down to such a meal as was never eaten but at Christmas time. Turkey and cranberry sauce; potatoes with such rich turkey gravy that the mouth waters even now to think of it; puddings, good old plum-pudding made months before and stored to ripen, served with rare old brandy sauce; mince pies; sweetmeats; then comes the treat of Christmas, some choice old wine, served to each and every one this one day of the year by Dad himself.

Oh, what a spirit of joy Christmas brings! But hold! perhaps we ought to say **used to bring.** The tentacles of commercialism and materialism have laid such rough hold of the season of late years that the spirit has all but disappeared and a burdensome feeling of dissatisfaction taken the place. Children and parents no longer romp together and make merry on Christmas day. They are too busy watching for the letter carrier and expressman to see what they "are going to get." This feeling of eager expectation fades to one of bitter disappointment when the carrier passes the door without leaving a package; or if by chance a parcel is left, the disappointment is keener still when the gift received is not appreciated. For weeks before the holidays, gift selecting, instead of being the pleasure it should, is a burdensome imposition, because the spirit of the occasion is lost sight of and instead of it being Children's day and an occasion for little acts of charity and mercy, every person in the country feels that he must make a present of some gift to every other person of his acquaintance. This feeling is encouraged by the merchants, to help dispose of their wares, and the result is the beautiful Christmas spirit is fast passing away and giving place to a morose feeling of resentment.

But why should we allow commercialism and materialism to destroy the most beautiful spirit ever engenered in this world? Why can't we be rational in this as in all other things and cling to the part of the gift-making which is in keeping with the season, while rejecting that which is out of harmony? Suppose for a trial, instead of making a lot of senseless gifts to friends and acquaintances the money that would be spent that way be used in supplying the poor children in the neighborhood with toys and good cheer, or the orphans in the fondling asylum with a day of happiness. The experiment, you will find, will repay you a thousandfold, for the quality of charity like the quality of mercy is twice blessed—"It blesseth him that gives, and him that takes," and in the effort to make those about you happy you will find you have recovered the old, the real Christmas spirit. Besides, we owe it to ourselves and to others to destroy this selfish gift-giving practice which has become so burdensome as to be intolerable. We must destroy the practice or it will destroy the beautiful spirit of Yule-tide, and the world will be the sufferer for such a loss. The spirit of Christmas is the true light of Christianity, and modern progress, and this spirit cannot, must not, be lost, with its message of "Peace, Good-Will Toward Men."

CHURCHMEN WANT PUBLIC-COMFORT STATIONS.

The establishment in Des Moines, Ia., of three public-comfort stations for men will be asked of the city council by the church laymen.

The initiative of this movement began several weeks ago at a meeting of the Brotherhood of the Grace Methodist church. Other brotherhoods of different denominations took it up, until now there is a determined effort being made and an interdenominational committee appointed to appear before the city council at an early meeting and make the request. That there is an immediate need for such downtown public-comfort stations for men only is conceded by all of the church brotherhoods, according to the number of such laymen's organizations which voted to join the movement to secure such stations. It is agreed among the laymen clubs that the request be made for two first floor stations in the West Des Moines business district and one in the East Des Moines business district.

BOARD OF HEALTH WANTS TO RETAIN CONTROL OF PLUMBING INSPECTION.

Efforts to have the plumbing inspector transferred from the Health Department to the Building Inspector's Department, in Portland, Ore., have aroused considerable opposition on the part of the health officials, but whether the present fight is to be brought to an early end depends largely on the opinion of the city attorney, who has been asked by the health and police committee of the city council to determine whether the charter would permit the proposed change.

Members of the Board of Health argue that if the plumbing inspector were taken away from their jurisdiction, it would make it necessary for them to employ plumbing inspectors to aid in determining sanitary conditions. They presented letters from 84 cities of the United States, in which it was said that of that number 77 cities combined the plumbing inspector with the health department.

The building inspector asks that the plumbing inspector be assigned to his department to facilitate the inspection of buildings. The plumbing inspector, however, it was pointed out, would have no authority to enforce plumbing regulations if separated from the health department, which at present enforces his rulings.

It was also called to the attention of the committees that the present plumbing law is not efficient and is not easily enforced. To correct this, the health and police committee appointed a special committee to prepare a new plumbing law. In addition to the plumbing and building inspectors, the special committee includes Charles Dierke, a sanitary engineer.

To receive the report from the city attorney concerning the right of the city council to change the plumbing inspector from the health department to that of the building inspector, the health and police committee will hold a special meeting in the near future.

Roughing-In Stacks and Branches—V.

By Henry D. McCormack, C. E.

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One form of adjustable roof flange is shown in Fig. 16. These may be had in copper or made of galvanized iron, and in all sizes for both standard and extra heavy soil pipe. They may likewise be had for wrought pipes, either standard, extra strong or double extra strong. Roof flashings can now be carried in stock the same as any other kinds of soil pipe fittings and will save considerable time for the plumber and helper, as well as helping out of a difficult task many workmen who have not learned lead beating. Of the two materials, copper and galvanized iron, of which roof flanges are made, copper will be found the preferable, as there is less liability of it deteriorating from exposure. Most of the flashings worked into place by a plumber are made of sheet lead, that being his choice of material. In addition to the fact that lead is the only kind of material which can easily be worked in most of the methods described, it possesses the further advantage that it will last indefinitely, outlasting, in any case, the roof on which it is placed, and oftentimes outlasting the drainage system itself. Next to sheet lead, copper is the most suitable material for roof flashings, galvanized iron being the least desirable of any materials used.

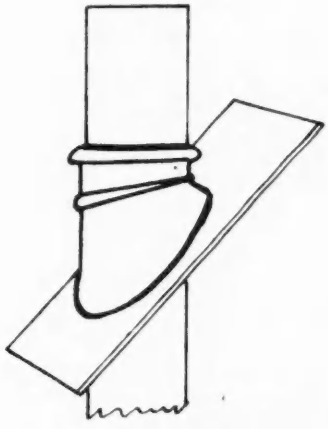


Fig. 16. Adjustable Roof-Flange.

So far there has been no explanation of how roof flanges are made tight to the roofing materials of anything but wood-shingled roofs. It is obvious that the flashing material cannot easily be nailed through slate or tile roofs, and the question naturally arises just what to do in such cases. If the flashing in such case is in a sheltered position, and heavy sheet lead is used, no further precaution need be taken, for the weight of the lead will hold the flange down in place so rain water cannot beat under. If exposed on the windy side of a building, however, particularly if any material other than sheet lead be used, the sheet may be fastened to the roof and held securely in place by means of clamps slipped up under the slates and on top of the roof flange. To prevent the clamps from becoming worked loose, it is good practice to tack them in place with solder. On a tin or copper roof the outer edge of the flashing material may be soldered to the roof covering, while on slag or tar roofs the flange should first be set in place and tacked to the roofboards, and the roofing material then put on and extended clear up to the pipe collar on top of the roof flange.

One of the most puzzling tasks of a young plumber, the first time he is called upon to extend his soil, waste and vent lines through the roof, is to locate the holes. This is particularly true if the roof is a pitch or A roof, for the steeper the angle the more puzzling it seems to be. The task is not so difficult, however, as it would seem, for with the aid of a plumb bob and line the holes are easily located. The manner of using the plumb bob is shown in Fig. 17. From the upper and lower sides of

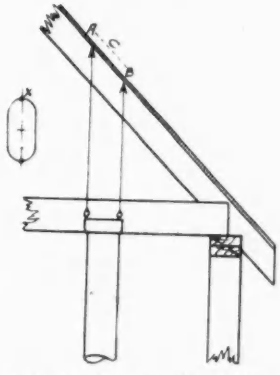


Fig. 17. Locating the Holes.

the hub the pipe is plummed to the under side of the roof boards, and nails driven through at the points *a*, *b*. The compasses may then be set one-half the diameter of the hub or pipes, depending on which is to fill the openings and the outline of the hole, as shown at X, marked, either on the under side of the roof boards or on the shingles above. If the hole is to be cut from underneath, no nails need be driven through the roof. Having laid out the hole to be cut through the roof, the next thing is to effectually plug the top of the soil stack with oakum, so that chips cannot fall into the pipe, then bore a hole through at some point on the line as laid out, and, with the compass saw, cut out that section.

Example of Two-Pipe Plumbing Installation.

An example of a two-pipe plumbing installation is shown in Fig. 18. This illustration shows so clearly the salient points of the system that little need be said in

explanation of the drawing. It will be observed that the soil stack is accompanied by a vent stack, which is connected to it below the outlet to the lowest fixture and is reconnected to it again above the vent outlet to the highest fixture in the top group. Each fixture in the installation, it will be further observed, is separately trapped, and each trap, outside of the closet trap, is ventilated through a special pipe connected to it near the crown. Where the soil stack passes through the roof it is increased in size, for the reason previously explained. If this installation were for a warm climate, however, there

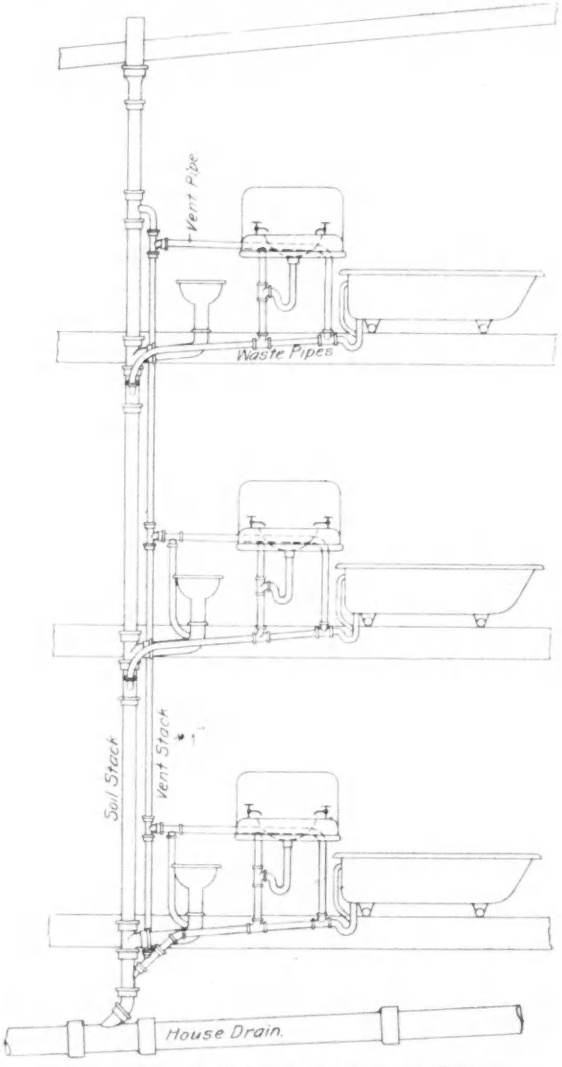


Fig. 18. Example of 2-Pipe Plumbing Installation.

would be no occasion for increasing the stack before it passes through the roof.

Soil, Waste and Vent Branches.

From the main soil, waste and vent stacks, where they pass up through the several floors of a building, branches must be taken off for the fixtures located on the different floors. These branches may be run on one of two different plans, known, respectively, as the back-venting system and the loop or continuous system of ventilation, both of which belong to the two-pipe system of plumbing. The back-vent system is the one most commonly used and the one with which plumbers throughout the country are most familiar. The principles of this system, applied to the roughing-in for a battery of water-closets, may be seen in Fig. 19. In this illustration an isolated battery of closets, without other features, is selected for the sake of simplicity, and the vent stacks are then shown back of the soil stack, with the back-vent main branch connected to the vent stack above the level of the fixture outlets. If batteries of closets were to be installed on only one floor, the main back-vent branch, instead of

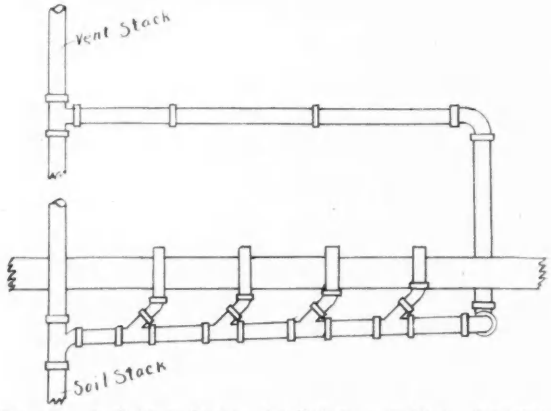


Fig. 19. Back-Vent System Applied to a Battery of Water-Closets.

being connected to a separate vent stack, would be connected to the soil stack, above the highest fixture. In the illustration the vent stack is shown alongside of the soil stack, although, instead of being located alongside of the soil stack, it might be at the opposite side of the toilet room. It will be noticed that in this system of venting a special vent branch connecting with the horizontal main vent is extended down to below the floor level, where it is connected to the closet bend.

(To be continued.)

HOTEL GALVEZ TO BE HEADQUARTERS FOR PLUMBERS' NATIONAL CONVENTION IN GALVESTON.

The plans of the Galveston master plumbers toward the completion of arrangements for the entertainment of the National Association of Master Plumbers in Galveston in June, 1911, are progressing favorably according to the statement of Secretary R. C. Malitz of the Galveston local.

It has been determined to make Hotel Galvez, which it is hoped will then be completed and open for the reception of guests, the headquarters of the visiting plumbers, and from all indications there is every evidence of the intention of the visitors to own Galveston from the seawall to the bay during their stay in the city.

"I expect that I will shortly have to engage a stenographer to attend to the preliminary correspondence in connection with the coming convention," said Mr. Malitz. "About the lowest number of letters I am receiving is five a day, and they run as high as twenty or more on many days. It is taking time from me and from the rest of the Galveston plumbers that we would ordinarily put into our business, but we are determined that when that convention is held in Galveston there will be no cause for unfavorable comparisons between the Oleander City and the other cities that have entertained the convention in past years. There have been no distinctly new developments recently. The story is simply that we are all working hard, and when the crowd comes to Galveston from all over the United States we will be ready to give them the time of their lives."

A PLUMBER'S DIARY

BY PHOENIX

XXVII.

Getting Wise to the Business.

"What's Jack doing since he quit handling the tools a little while ago?" "Oh, he's running a plumbing business over at the Junction", was the reply. We seem to have arrived at a point where almost everybody recognizes the fact that there is a distinct difference between running a plumbing shop and conducting a plumbing business.

The man who believes that all that is necessary in order to start is a small room, a few tools, some pipe and fittings and that success will come and perch right over his door, well that man has got another "think" coming to him. Such a mode of procedure very likely was true some thirty years ago, but vastly different conditions prevail to-day.

The examination of the ratings of plumbers, as shown in Bradstreet's, would not be a fair test as that shows people who have been in business for some length of time, but if you examine either the daily or trade papers you will observe the amount of capital that the new plumbing firms start with to do business.

For the past two or three years I have made it a point to notice this, and, while I have kept no record of the same, I can say that my impression is that the average will run in the $5,000 class while the number who start with $1,000 is less than the first mentioned. Think, for a moment, what it means, to-day, to open up a plumbing business. Then just contemplate $1,000 and observe how far it will go towards accomplishing that purpose. You will then have an idea of how long the man will last to-day who starts, ignorant of the business, and with little or no capital.

I do not care how good a mechanic a man may be nor how many friends he may have. If that mechanic has small knowledge of general business affairs he will make a huge mistake in starting a business until he has acquired a fair idea how to do it. The more friends he has and the more jobs he lands, the worse will be his financial condition. He will be skinned to death by unwise competition and the harder he works, the less he will have to show for it. Finally (if he does not get wise) the end will come and he will "go broke."

There is a "Ginnie" that comes by the house nearly every day. He owns three rigs, two vacant lots and has a small home all paid for. He has made it in five years and began by selling "de banan" from a push-cart. In that same time, I could probably mention at least 50 men who started in the plumbing business and on a far higher plane of life than this same "Ginnie", who is looked down upon by many for the simple reason that he is of the foreign element.

Of the 50 who started in the plumbing business more than 40 have failed. Some went back to the tools, while others started up once more with crippled credit and are living, to-day, from hand to mouth in every sense of the word. What does it profit a man to take a $500 job or a $10,000 contract, if he stands to lose money on it?

If the plumber is of the bull-headed type and simply will not learn and lays it all to luck, he will eventually lose confidence in both himself and the people. If he is disposed to learn, he will figure that he has paid just so much for experience and proceed to get next as soon as he can.

But aside from this, it seems to me that we do not know how to lay up much from the money coming in. It's the dollars saved that count up. With too many of us it is "easy come and easy go" and also too many "Jack Pots" with the usual trimmings.

Take it all around a man has fully as much or more to acquire in the way of knowledge and experience from the business point than he has in learning the trade part of the game. He will find that it is necessary for him to be able to keep a set of books. Not that he will always do the actual work of keeping them, but he must be able to be independent and competent to find out for himself just where he is at. In addition to this he should be prepared to get out a set of plans and specifications that will stand the test. He will have a better and more accurate knowledge of the work and business if he is able to do this, no matter if he hires someone else to attend to these points, while he sees to other matters.

There are advertisements to be written for the papers, business letters to be sent out in a business manner and gotten up in a business way so that they shall not resemble the attempts of a 10-year-old child. This is not a compliment to the 10 year-old child, either. If the master would see the stream of money coming in to the shop greater than that which is going out, he must know how to estimate correctly.

If he would keep in touch with the times and the various conditions in the trade and business he must read. The papers that relate to the craft should come to him regularly and their contents be noted. Ditto the books about his craft that are published from year to year.

Yes, my friend, before you are done with it, you will conclude that the master has some few cares and trials of his own, and that he fully deserves and earns all the benefits that come to him.

The Diary Gets Full.

Just the diary, mind you. No more pages left upon which to write, and as we do not want to start another right now, the thing must stop. The main actor will not die, for he wants to hang on to life for several years to come, and as he feels just as young as he ever did, appetite is good and no check-rein required, the chances are that he will kick along for quite a spell to come.

After we have traveled the highways for 15 or 20 years we sometimes look backward, and, gee whiz, the knocks and bumps that it has taken to beat a little common-sense into our heads. If we had known, when we started, that it was to have been such a rocky road, it would have seemed mighty tough. But when the least is said, it can be called "practical." You bet it is!

The wisdom of the world knocked into you for keeps. This diary was not made "to order," but has consisted of actual matters that have happened, and much more might have been written. Perhaps enough has been given, so that the reader can arrive at the conclusion that if a person really makes up his (or her) mind that they are going to

bring about certain results, those things are due to be accomplished. Our life in America, as proved by the experiences of thousands, shows that about any person can accomplish whatever they set their hand and mind to do.

The thing is to act and not "stall around" forever. Some other person will slip alongside and then pass, stealing your thunder, "if you don't watch out." In the past there has seemed to be a kind of chronic indifference on the part of many connected with our craft. This was not local, but general. It has been said that the plumber did not want to know any more than he had to, and that saying was quite to the point.

I do not believe that the same thing is true to-day, at least it is not, to the extent that it was several years ago. Papers, books and magazines relative to the craft have leavened up the mass. Various associations have brought the craftsmen and men of business into closer communication with each other and created a much better understanding. They have also established a certain stability and dignity that were lacking before.

There is no reason why these associations should not continue to grow in both numbers and influence, and they have it in their power to do an almost unlimited amount of good. The interests of our craft and the business demand that we must have a much better and a larger representation in the affairs of life than we have had, and all history points the moral that such a result can never be accomplished by individuals acting single-handed.

It is high time to get in line and by your actions show whether you are for progress or are satisfied to stick forever in the rut. As yet matters are far from being in a settled condition. The heating proposition is up for discussion, more actively at present, than for some time past, and certainly some sanitary matters are in a "highly mixed-up condition."

Our trade and business needs the best that is in all craftsmen. It needs the best that is in the best business men, and it needs it all the time. This idea that, because you tell a few points upon which you are wise, you will lose some mighty point that will give some party a strangle-hold upon your business, is all to the wrong. In the first place, no one man is big enough to handle all the trade there is, and in another place, no one head, to date, has succeeded in cornering all the wisdom and keeping it bottled up.

Selfishness and secrecy no longer go. I think that the writer of these words has shed information quite freely during the past two or three years and I desire to state that fully as much, or more, has come back to me from others in that period. When you start an idea gallivanting around the country, you can never tell where it will end up nor the exact results that it will bring forth.

Coming down to the present, the day before Christmas, I am tempted to make one last entry in the diary, after the fashion of so many records that have been set down, so here goes:

Dec. 24, 1910.—Struck this town some time ago and it looks good to me. Guess I'll try and stick it out some little time, for there seems to be a-plenty doing.

Had a hard day's work and was tired when I got home, and after supper, as I sat smoking my pipe and just soaking in the quiet and the restfulness, I wondered what was the best lesson that all this travel and trouble had taught me, and, after a while, it came to me in the words of one of the writers of another day these sentiments: **"Yesterday is dead, forget it. To-morrow does not exist, don't worry. To-day is here, use it!"**

(The End.)

PUBLIC-COMFORT STATIONS FOR LIVERPOOL, O.

Director of Public Service C. V. Beatty of East Liverpool, O., has asked the city council for funds for the erection and maintenance of several public-comfort stations, a feature this city never before possessed. Being the center of an extensive interurban railway traffic the need of such a public improvement is absolutely necessary.

PUBLICITY CLUB WILL TRY TO ESTABLISH PUBLIC-COMFORT STATIONS IN MINNEAPOLIS.

The Publicity Club of Minneapolis, Minn., has appointed a committee to investigate the question of establishing public-comfort stations in that city, and members of the club are so enthusiastic over the matter that they are confident they will succeed in establishing such conveniences. Speaking of the matter, S. S. Thorpe, who is a member of the committee, said he considered this to be one of the most urgent needs of the city. "Most cities have comfort stations," said Mr. Thorpe, "and we have plenty of room for them. They are a great deal better than a lot of small three-cornered parks. Minneapolis has a great many luxuries which are not nearly so much needed as public-comfort stations." The committee, composed by C. M. Loring, chairman; S. S. Thorpe, W. A. Eggleston, E. H. Hewitt and Harry W. Jones, will meet in the near future to arrange for a campaign for these conveniences.

PLUMBING ORDINANCE PREPARED FOR SIOUX CITY, IA.

A new plumbing ordinance for Sioux City, Ia., has been prepared and filed with the city council. It is expected that City Attorney F. E. Gill will draft the measure in its staple form at expiration of the time limit. The new ordinance stipulates that an annual license of $50 a year shall be charged of masters and $1 a year from journeymen. Qualifications of journeymen and masters applying for right to work will be passed upon by a board of examination. This board is to consist of the superintendent of public safety, the city engineer, the plumbing inspector, a master plumber and a journeyman plumber.

Bonds of $2,000 a year will be required from master plumbers. Restrictions upon the quality and weight and material of piping are made. Permits for plumbing work are to be obtained from the department of public safety.

Inspection fees are specified as $1 for the first fixture in a building, 50 cents for the next six, and 25 cents for all fixtures thereafter.

PASSAIC MASTER PLUMBERS' ANNUAL ELECTION.

The Master Plumbers' Association of Passaic, N. J., held its annual election of officers on Thursday evening, December 15, at the Hygeia Hotel in that city. The event was attended by several speakers of note, among them Dr. Nelson Eliot, of the Passaic Board of Health, who spoke on the way in which master plumbers can be of great assistance to the health department. He explained at great length how the plumbers can enforce the various sanitary rules and save the state much money that would of necessity have to be expended in the event of these laws not being observed. Plumbing Inspector Frank Kevitt also spoke along the same lines and agreed generally with what the health physician had said. Before the speeches were called the election was held and the ballot showed that the following were elected for the coming year: John Collins, president; Simon Rossna, vice-president; Benjamin Werksman, secretary; Robert Burrell, financial secretary; Fred Geiger, treasurer. Those who attended the banquet were: George Aldous, Simon Rossna, John Collins, Frank F. Kevitt, Dr. Nelson Eliot, Fred Geiger, Benjamin Workman, Steven Kieler, Joseph Kevitt, John Belli, Leonard Hole and Isaac Koehler.

The Kline-Marshall Furnace Co. will erect a large plant at Canton, O., for the manufacture of warm-air furnaces. The foundry plant will occupy a site measuring 40x120 feet and the assembly room will be 40x80 feet, and will be two stories in height.

A PRACTICAL MANUAL OF STEAM & HOT-WATER HEATING

BY EDWARD RICHMOND PIERCE

In this section Mr. Pierce commences the presentation of an array of facts in regard to the heating surfaces of cast-iron house heating boilers not before given to the public. This discussion will prove more startling than any of the many astonishing things he has told us about boilers in this excellent series on house-heating. Read this and the section to follow. You will certainly not regret the time thus spent.

SECTION XXXII.

I do not claim that the data I have shown as absolutely necessary to be given out by every boiler-producer, in addition to the little that they now do give out, is all that should be covered when a Testing Code for House-heating Boilers is finally prepared. Far from it. But I do think that until a suitable code, that all can agree upon can be produced, that every steam-fitter and engineer is, for his own protection, in duty bound to find out for himself, in some way, every fact covered by tables HZ and I Z of this series. And in addition, as much data in regard to the firepot size, and other things yet to be taken up fully, as he may require for his personal protection.

In the matter of the value of the various sections of the heating surface in a cast-iron boiler, the boiler men are not, as yet, a unit. A very exhaustive series of tests covering nearly every type of boiler and its variations now on the market has been made by individuals, and to a slight extent the results have been divulged, and the tests are quite fully in accord with the published tests that have been promulgated as to the value of the heating surfaces of power-boilers.

In order to give the tests that have been made on the different boilers it would be necessary to fill a space equal to more than that used in this magazine in 10 years of publication. It will be impossible to give even a summary of the items shown by Table H Z that every boiler-catalog should give in detail for any of the prominent cast-iron lines now on the market, for the reason that there is not one single line that is not full of variations. There is not a boiler-catalog covering a line of cast-iron boilers that is fully consistent with itself all the way through. The stack-temperatures are found to vary all the way from the 200 deg. F. to the 800 deg. F. in temperature in order to produce the catalog-rating for an eight-hour run on some lines, while on another line, there may not be a stack-temperature in the whole list that will run outside of the recognized points of greatest economy for boilers of this class, namely; from about 350 to 450 deg. F. One of the most important features disclosed in my personal study of boiler-ratings is the different rates of combustion that is often required in one line of boilers to secure the necessary amount of steam to supply the rating for any definite number of hours. A certain line of quite popular boilers have 3 boilers cataloged in one line rated to carry 1,050, 1,250 and 1,400 sq. ft. of radiating surface on a certain size of grate. Another line with precisely the same grate and about the same fire-surface is cataloged at 850, 950 and 1,050 sq. ft. One other popular line with the same grate-surface and almost the same heating surface is cataloged 1,300, 1,425 and 1,550 sq. ft. These three examples are not, as is sometimes the case, all cast from the same patterns, except the doors, but are distinctly different in the arrangement of the sections. In each case, however, when tests are made of the three there is developed a great difference in the stack-temperature required to develop from the fuel the necessary amount of steam to sustain the catalog-rating for an 8-hour period. These are typical boilers selected from widely separated sections of the country. Tests on these show that there is no change whatever in the grate-surface or size of fire-pot in order to secure the increased rating. The only difference made in either of them is the increasing of the indirect heating surface. A short study of Tables H Z, I Z and J Z, in connection with these ratings should enable any one to see what was done to produce those ratings from the same amount of coal held by the same firepot on the same sized grate. It is hardly necessary to state that the stack-temperature on the three ratings varied over 300 deg. between the highest rating and the lowest if an 8-hour run was maintained on each boiler.

It must not be taken from the foregoing that on a round type of boiler that two or three different ratings may not be legitimately given to a given size of grate and fire-pot. This phase of the question has been admirably stated in a publication recently produced for private distribution, as follows: "Boilers that have a moderate quantity of heating surface and a short fire travel will operate when attached to a flue that would be wholly inadequate to the requirements of a boiler with the much-vaunted long-fire travel. The reason for this is that the draft in the chimney-flue is caused by the difference in the temperature of the column of air in the chimney and the temperature of the external air; and the boiler with the short-fire travel delivers the gases to the chimney at a high temperature, which lightens the column of air in the chimney, causing the heavier outside air to take its place, thereby creating the necessary draft. Because of this variation in the chimney-intensity, it is possible to arrange boilers with a varying number of sections as in the round type. But the statement that there must be an ideal number of sections which should be placed between firepot and dome of all round boilers is misleading, for such an ideal can never be realized owing to the **wide difference in the intensity of chimney-drafts.** It has been demonstrated by actual tests that the addition of a limited number of sections above the fire-pot increases proportionately the value of the heating surface in the fire-pot and a relative increase in the power derived from the fuel, thereby allowing a proportionate increase in the rating of the boiler (which has the additional sections) over one having fewer sections, even though the grate and fuel capacity are alike in both boilers. It must therefore **always rest with the**

heating contractor to select the boiler which will suit the chimney-conditions."

But how can the heating contractor intelligently select from any catalog now in use? What has just been quoted in regard to round boilers, is equally applicable to every kind, and shape of vertical sectional boilers, whether cast-iron or tubular..

This manual was commenced with a discussion of chimneys, for the reason that the chimney and its quality of draft and volume absolutely dominates the question as to the exact kind of a boiler best to put in for most satisfactory results.

The quality of the draft and the volume of it will first be looked at to determine the question of stack-temperature that can be selected to the greatest advantage in the matter of combustion. The range may be anywhere from 250 deg. F. to as high as 800, or, even in some known cases over 1,000 deg. F.

The usual range, however, on jobs installed in places where the altitude is under 1,000 ft. above the sea-level, for house-heating is in the vicinity of 350 to 450 deg. F. in the stack and, with the exception of chimneys that develop most unusual draft and volume combined, the cases where a boiler requiring a higher stack-temperature than that covered by those figures can be used with satisfaction to steamfitter, and owner alike, are quite rare.

It will not require a very long hunt on the part of the steamfitter, however, to find boilers that in order to maintain the catalog rating will have to show at least 700 to 900 deg. stack-temperature.

Grant that we have considered the draft, the volume, and the general condition of the chimney; the kind of coal that is to be burned, which will determine the B. t. u. available per pound; decided as to the number of hours that the job is to run without attention; we then require a firepot with sufficient cubic contents to not only hold the quantity of the coal that is to be used in the selected time but that will also hold a good-sized surplus in order to provide for a sufficient amount of fuel for re-kindling. It should provide for an hour or two additional run in an emergency, or when the outside temperature is several degrees below the zero or other selected winter temperature. This firepot chosen, the question of the kind and amount of heating surface to be placed above the firepot can be taken into the account.

As has been stated, this is a point over which there seems to be an honest difference of opinion among the manufacturers, and among the trade as well.

The writer of this series has, in the past, been favored with the views of nearly all the most prominent producers of cast-iron boilers in this country, and has had the pleasure of meeting some of the largest producers of France, England and Canada, who have also expressed their views on this question of heating surface. I can only say that as the net result of all these interviews, or talks, that the cases where the opinion advanced had been based upon the results of experiments upon a large number of boilers produced by other manufacturers than themselves, were very rare. And in these few cases the experiments were in only two or three instances extended to boiler construction that differed materially from that produced by the investigator. With the exception of a very few, the position taken in regard to the matter of heating surfaces can be summarized in the statement that all surface which in any way can transmit heat from the flame or the gases of the coal to the water in the boiler is to be considered as heating surface in that boiler. In only an occasional instance has the producer suggested that there should be allowance made for difference in effectiveness in this surface.

Within the past few years this question of effectiveness of surface has received some little attention from a few of the thinkers connected with the industry of heating houses with steam or hot water.

That the matter is not fully appreciated by either the architects, or the trade at large, is evidenced by the numerous heating specifications that come to the trade calling for boilers with a certain size of grate and a stated gross amount of heating surface, but not one word as to the distribution of that surface. Not a word as to whether it is to be placed 50 per cent direct and 50 indirect, or 25 indirect and 75 per cent direct, or in some other combination. I do not recall this ever having been stated in one of this sort of specifications.

It is not necessary to discuss the question as to whether the surface exposed directly to the flame is not more valuable than that not so exposed and usually called the flue-surface. But, it is of importance, to carefully examine the relative value of the two in the common house-heating boiler.

(To be continued.)

CONVENTION DATES.

January 17 and 18, 1911.—The 17th annual meeting of the Wisconsin Master Plumbers' Association, at Green Bay, Wis. The officers of the association are: President, George F. Reeke, Green Bay, Wis.; vice-president, Louis Sonntag, Sheboygan, Wis.; secretary, P. H. Ryan, Appleton, Wis.; treasurer, Fred E. Green, Janesville, Wis.

January 17, 18 and 19, 1911.—The 21st annual meeting of the Iowa Master Plumbers' Association, at Waterloo, Ia. The board of directors will meet January 16th in the same city. The officers of the association are: President, J. F. Garvey, Mason City, Ia.; vice-president, C. G. Bosch, Burlington, Ia.; treasurer, J. F. Gearen, Sioux City, Ia.; secretary, H. B. McCarten, Dubuque, Ia.; organizing secretary, J. A. Farrell, Des Moines, Iowa.

January 24, 25 and 26, 1911.—The 17th annual meeting of the American Society of Heating and Ventilating Engineers, in the Engineering Societies' Building, New York City. The officers of the society are: President, J. D. Hoffman, Purdue University, Lafayette, Ind.; first vice-president, R. P. Bolton, New York City; second vice-president, S. R. Lewis, Chicago; treasurer, U. G. Scollay, New York City; secretary, Wm. M. Mackay, 113 Beekman St., New York City.

January 25 and 26, 1911.—The 19th annual meeting of the Illinois Master Plumber's Association, at Springfield, Ill., with headquarters at the St. Nicholas hotel. The officers of the association are: President, Frank U. Patterson, Springfield, Ill.; first vice-president, W. J. Hilliard, Elmhurst, Ill.; second vice-president, C. D. Brownell, Champaign, Ill.; treasurer, Wm. Schlegel, Belleville, Ill.; secretary, W. C. Haviland, Aurora, Ill.

February 6, 7 and 8, 1911.—The sixth annual meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers, at Milwaukee, Wis. The officers of the society are: President, W. G. Williamson, Detroit, Mich.; first vice-president, Edw. F. Kane, Wilmington, Del.; second vice-president, C. I. Putts, Jr., Baltimore, Md.; secretary and treasurer, Thos. J. Claffy, 215 Madison St., Chicago.

June 5, 6, 7 and 8, 1911.—The 23rd annual convention of the National Association of Master Steam and Hot-Water Fitters. Place of meeting not yet decided upon, but it will probably be in Chicago. The officers of the association are: President, Charles A. Geoghegan, New York City; vice-president, Edward B. Denny, Newark, N. J.; treasurer, Juan A. Almirall, New York City; secretary, Henry B. Gombers, 260 West Broadway New York City.

THE FAMILY GROWLER.

"Why are you weeping, little boy?"
"I broke de pitcher."
"Well, there's no use crying over spilt milk."
"G'wan! Dis wuz beer."—Louisville Courier-Journal

POINTS ON DRAWING.

Editor "Domestic Engineering":—I should like to get some points on the subject of drawing, as applied to our crafts, and would thank you for any advice that you can furnish. W. H.

If you care to invest some money in books relating to the crafts, you will find plenty of illustrations in the works of Cosgrove, Starbuck and King. These will give you the relative value of the drawing as it is of use to the every-day man. If you desire to become proficient, yourself, we would suggest that you get into communication with some good trade correspondence-school and put yourself under their instruction, from which in due time and with a moderate amount of application, you should emerge a good mechanical draughtsman.

We would suggest, however, that you, if such is your desire, make up your mind to stick to the course to the end. The reason why so many seemingly fail in such courses, is not because the course is difficult, but because they get tired before the race is half run. If you can devote an hour or two to the study each day, a few months will work wonders. It is the sticking to the task that brings its just rewards.

THE MELTING POINT OF LEAD AND TIN.

Editor "Domestic Engineering":—Will you be kind enough to tell me in the next issue of the paper what are the melting points of lead and tin?

G. V.

We find, upon looking the matter up from some of the proper authorities, that the melting point of lead is stated as 608 deg., and that of tin as 446 deg.

PIPE-COVERING AFFECTED BY DAMPNESS. THE REMEDY.

Editor "Domestic Engineering":—A certain section of one of the runs of piping passes through a place, where it seems to be subject to dampness, which has a bad effect on the pipe-covering. Can you, or the readers, offer any suggestions of benefit on the subject? L. K.

If the dampness affects the covering, it might be of assistance to paint it with two or three coats of lead paint. If this does not solve the difficulty, you will probably have to use, on that particular section, covering formed of cork. It is said that this will not be affected by dampness or water.

PRESSURE PER SQUARE INCH OF WATER.

Editor "Domestic Engineering":—I have a fall of 10 ft. from a tank. Will you tell me how much the pressure there would be per sq. in.? O. D.

The pressure would be about four and one-third lbs. per sq. in. Estimating, not too finely, you can ascertain this for yourself. Multiply the height in feet by the decimal .42 and point off. The result will be very near the amount of pressure per sq. in. Forty-three hundredths represents the pressure per sq. in. for one ft.

BEST STYLE OF CHIMNEY.

Editor "Domestic Engineering":—Does it make any difference with the way the chimney "draws" whether it is round or square? Which is better? I. M.

The round type seems, from most reports, to have given the better satisfaction. In these days, it is not policy to run a chimney with a diameter less than 9 or 10 in.

The 12 in. by 4 in. type of chimney of our forefathers is out of date, and, at its best, was not constructed on the right principles. If you must have a type of chimney that is not round, make it 8x8 or 12x12 on the inside. Of course the architect will probably kick, but it seems to us that the person who is going to live in the house should be the one to have the final say so.

CARE IN BLOWING OFF THE BOILER.

Editor "Domestic Engineering":—I wish that you would print a few rules in the paper for use when one has to blow off the boiler and greatly oblige.

One of the Readers.

1. Shut off the radiator valves.
2. Use some light fuel to get up the steam quickly.
3. When 10 or 12 lbs. are shown on the gage, open up the blow-off valve, but do not draw the fire until nearly all the contents have been blown off.
4. It will hasten the cooling of the boiler if the fire be removed entirely from the ash-pit into which it has been dumped.
5. The cooling process will be made easier also, if you open all the draft and cleanout doors. This is a very good time to clean out the flues in the boiler.
6. The boiler will be cool enough to let the water in again when you can stand it to place the bare hand against the fire-pot or the flues.
7. Allow a little water to run through first to wash out any sediment that may have remained, then close the blow-off valve and fill the boiler to the water-line. You may then start a fire, but do not forget to open the radiator valves before you leave the job.

HOW SHOULD PIPE-HANGERS BE FASTENED IN CONCRETE?

Editor "Domestic Engineering":—Would like to know from some of your subscribers, who have had experience concerning the best way to fasten pipe-hangers in reenforced concrete buildings for the purpose of hanging steam, soil, water and gas-pipes, especially the pipes that hang on basement ceilings. We know that if the building is finished the only way is to drill holes into the concrete, and use expansion shields and bolts; but what we want to know is the best way and what form the hangers should take to be put in the wood-forms before the concrete is poured.

Also is it good practice to bury gas-pipes in the cement floors of a concrete building? This has not been dis-

cussed in your paper before, and I think it would be of much interest to the trade.

Portland, Ore. M. M.

We publish this interesting question without further discussion and would like to ask our readers that they send us their experience in the matter, and also a drawing, if possible, showing the manner of accomplishing the work indicated. The usage of cement is growing rapidly and this is a particular kink that already has to be grappled with in every-day practice. We can not say that we are in favor of burying the gas-pipes in the cement. It is bad enough to attempt to locate a gas leak when the pipes are in plain sight, without having to tear up a lot of cement flooring also.

HOW I REPLACED A BROKEN TEE.

Editor "Domestic Engineering":—I note in the "Question and Answer" department of the Dec. 3d issue that L. H. D. asks how you should go about putting a tee into a 2-in. water-main in the ground.

The question is very ably covered in your answer, which I have noticed in most times is the case with questions asked in that department. My only excuse for butting in is because it reminds me of the time, a few years ago, that I was called upon to replace a broken tee in a steam-header, and I would like to tell the boys how I did that little job and cleaned up a few bones on the side.

I was sent up into a hustling little mill-town in northern Wisconsin one time to install a heating plant in a new hotel and bank building, being built by the man who owned most of the town. I had only got nicely started on the job when the proprietor of the saw-mill came into the basement, taking steps about 10 ft. long, and wanted to know if I was the steam-fitter, and if I was, would I come over to the mill and do a little job for him right away? You bet I would. I wasn't expecting it so soon, but I knew there was extra money in that town all right, and here it was hunting me up.

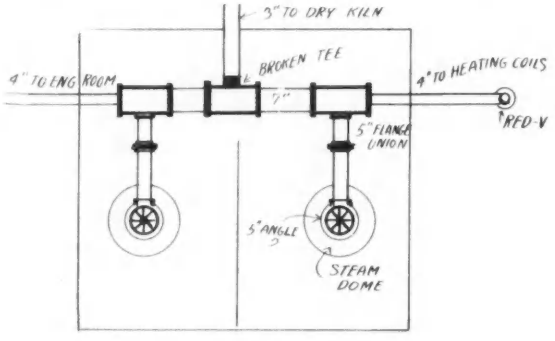


Fig. 1.

Well, his "little job" was nothing more nor less than a broken tee in the header over the boilers, and my first glance told me that my extra money was still quite a ways from being earned and spent. I'll just make a little sketch showing you the position of this tee and the general lay-out, looking down on top of the boilers. See Fig. 1.

No one knew what caused the tee to break. It looked to me as though it was defective when it was put in, and one or the other of the boilers might have settled a little, adding enough extra strain to cause it to give way. Anyway, it was broken and blowing like sin.

The proprietor, after introducing me to his "little job," wanted to let me the contract on the spot and put in a new tee. Ever been put in a place like that? The largest threading tool I had was the No. 2 "Toledo," cutting up to four inch, and there wasn't a 7x3 tee within 100 miles and no time to get one. That mill-man actually thought I carried such things wherever I went, and wanted that job done that night, ready to start in the morning. Well, I could see very clearly how I would have to worry along without that bunch of extra bones, but I thought, being I was there, I would take a look around the ranch, anyway.

Of course, I could have done the job easy enough in town, where I could have got the 7x3 tee, a couple of 4-in. and one 3-in. flange-unions, and a few nipples, by simply cutting off the two 4-in. and the one 3-in. lead and uncoupling the two 5-in. flange-unions and taking the header off entirely. But then I was up in the air for want of the two most essential requirements—time and material.

Well, as I say, I took a look around the place and found they did have a few odds and ends. Among the stuff I

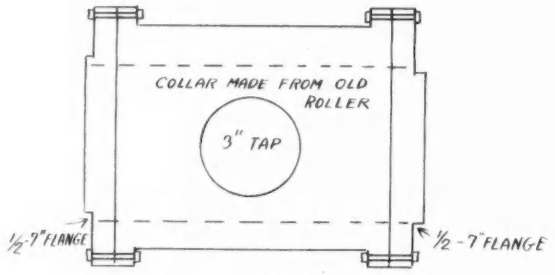


Fig. 2.

found was one 7-in. flange-union, one 3-in. flange-union and a 3x6 nipple. I also found in the scrap-heap an old planer-roller made of cast-iron about 3 ft. long and 8 in. in diameter with a 1-in. shell, leaving it just 7-in. on the inside.

The next place I struck was the repair-shop, where they had a lathe, planer, drill-press, etc., with an all-round blacksmith and machinist in charge. Right then the idea popped into my head how to put a new tee into that header, so I hunted up the boss right away and asked him how much he would give if I had the job done so he could start the mill next day. It didn't take a minute to make the bargain. I was to get $50.00 and all the men in the mill to help if I needed them, but I wasn't to get a cent if the job wasn't done in time to start the mill next day. Something of a sporting proposition, don't you think? I knew I could do the job, so couldn't lose, and the proprietor of the mill was willing to pay the price if he could get the men to work next morning.

I measured the broken tee from end to end, then the 7-in. flange-union, and found the difference to be something like 6 in. I then had a little talk with the machinist and went back to my job at the hotel.

At seven o'clock that evening I was back at the mill. The boilers were cold and everything ready. The proprietor was on hand with a few good cigars, and after the gas was lit up we went over to the repair-shop to see what the machinist had done, and say, I was surprised at the job that fellow had turned out. He had cut off a piece of the old roller in the lathe, making a cylinder or collar about 6 in. long. On each end of the collar he had shrunk on a steel ring or band for a flange; faced it off to the exact length and drilled the flanged ends of the collar to match the bolt-holes in the 7-in. flange-union. He had also drilled a hole through the shell of the collar, bored it out and threaded it 3-in. pipe-size, all in the lathe. The finished tee looked something like the rough sketch in Fig. 2.

When the boss got his eye onto that tee he got my idea

right away, but I'll say this much for him, he was game all right. Never said a word, just smiled and handed me another cigar. I came at him with "We'll just sit down and enjoy this one, for I don't want to get back to the boarding-house before bed-time." "All right," said he, "we'll take a stroll over to the office and I'll open up the safe so you can help yourself, being I'm holding the bag I might as well do it right." He was game, all right, came across right then with the yellow backs, and after I got them stowed away we went back to the mill and I started in.

I cut the 3-in. lead to the dry-kilns off the proper distance from the tee; broke out the broken tee; screwed one-half of the 7-in. flange-union onto each end of the 7-in.; dropped in my collar; put in the gaskets; inserted the bolts and the new tee was in place. I then connected up the 3-in. lead with the 3-in. flange-union and the 3x6 nipple. I threaded the 3-in. right where it hung with the No. 2 "Toledo," which, with the 3-wheel "Barns" cutter, were the only tools I took from my kit except the chain-tongs.

At exactly a quarter to twelve I was back to the boarding-house and between the sheets, with the 5 extra saw-bucks to the good and a handful of the boss' good cigars to smoke on Sunday. Which wasn't so bad, what?

Minneapolis. B. T. U.

THE EFFECT OF THE HOSE NOZZLE.

Editor "Domestic Engineering"—Why is water thrown a greater distance from a hose, when the discharge is reduced by using a nozzle?

Dayton, O. "M."

Because, in making use of the nozzle, you have reduced the quantity of water that can escape and acquired more force at this point.

FINDING THE CUBICAL CONTENTS OF A BARREL.

Editor "Domestic Engineering":—Will you be kind enough to tell me how to find the cubical contents of a barrel?

Dayton, O. "M."

Get an average on the diameter of the barrel first. This will reduce the problems to finding the volume of a cylinder for which the following is the rule: Multiply the area of the base by the altitude.

Another rule that will have to be used is that relating to the area of a circle. Here it is: The square of the diameter multiplied by .7854 will give the area of the circle (in this case the head of the barrel). Suppose your barrel reduces to eighteen inches diameter and is four feet high?

Then you will have 18x18x.7854x48 in., which equals 12,214.5408. Dividing this result by 1,728 (the number of cubic inches in one cubic foot) you will have 7.0686 cu. ft. as the cubical contents of the barrel.

He Knew.

"Look here," said one of the jurymen, after they had retired, "if I understand aright, the plaintiff doesn't ask damages for blighted affections or anything of that sort, but only wants to get back what he's spent on presents, pleasure trips and so forth."

"That is so," agreed the foreman.

"Well, then, I vote we don't give him a penny," said the other hastily. "If all the fun he had with that girl didn't cover the amount he expended, it must be his own fault. Gentlemen, I courted that girl once myself."—The Housekeeper.

AVOIDING TROUBLE WITH AIR-VALVES.

By W. H. Wakeman.

Having seen several photographs representing air-valves discharging hot water into various rooms in first-class residences, and known of other cases where water was delivered by them where it proved to be a great nuisance, I took care to prevent all such trouble in my

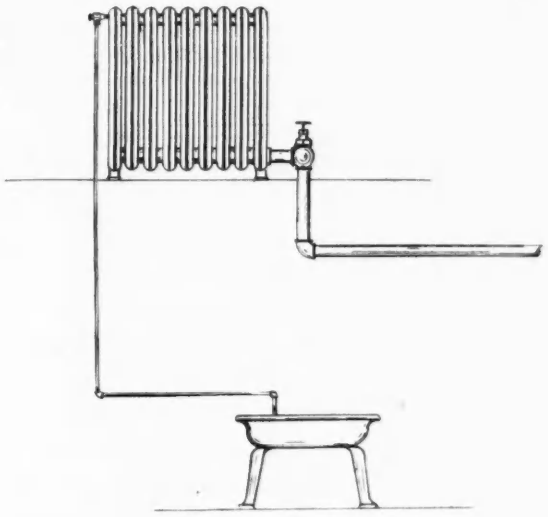


Fig. 1.

home, when installing a heating plant. I adopted Jenkins air-valves and piped the outlet from every one of them to a sink in the cellar. One of these radiators is illustrated in Fig. 1.

As this is a one-pipe system, it is especially desirable to have all air discharged freely from each radiator, hence

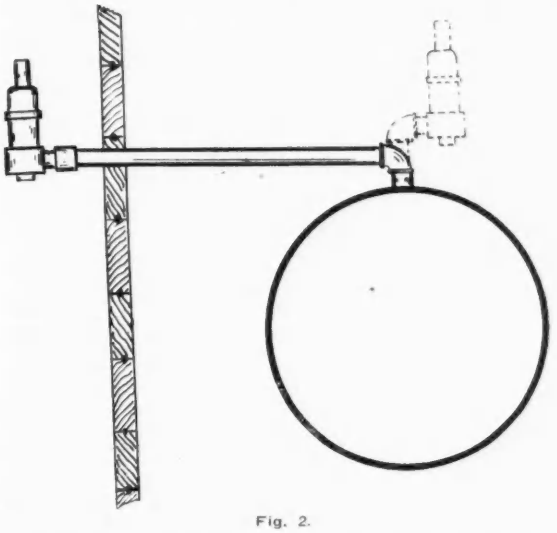


Fig. 2.

these valves are set to allow vapor to escape from them, but the heat that it contains is not lost, because the drip pipes act as so much more heating surface, and only a few drops of water escape to the sink. The ends of these pipes are always exposed to view, hence if too much heat is escaping, it is an easy matter to re-set the valve from which it comes.

Fig. 2 shows an end view of a heating main in my plant, with a ¾-in. air-valve attached to it. The dotted lines show its former position in a room where certain goods were stored that are easily spoiled. Owing to unfavorable conditions for which the air-valve was not to blame, it discharged water during the night when nobody was in the room, hence some of the goods were spoiled.

As the designer of the air-valve did not provide for piping the outlet, it was necessary to move the valve out of the room, to prevent more trouble from the same source. A hole was bored in the wooden partition and the piping extended through it, thus bringing the air-valve into a

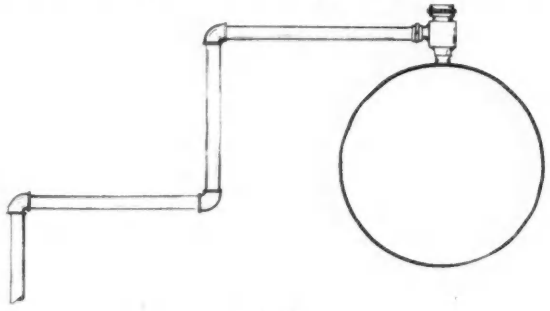


Fig. 3.

hallway where it can do no harm if unfavorable conditions cause more water to be discharged at this point. The new position is indicated by the full lines.

Fig. 3 illustrates another ¾-in. air-valve located on a 12-in. main carrying 3 lbs. pressure, in my plant. This valve is provided with a threaded outlet, consequently it was an easy matter to attach a pipe at this point and continue it until it would discharge water where it could do no harm. While this valve very seldom delivers water, still it is a possible condition for every case, therefore it is a good idea to be on the safe side, at all times. Sometimes it is necessary to locate these valves in a horizontal position, but if placed vertically as shown, the expansion plug is in a better position to operate freely, and it will prove more durable, because the plug hangs in a natural position.

NEW ENGLAND NEWS.

Among the corporations that have recently filed certificates at the office of the secretary of state of Massachusetts is the Brunnells Boiler Company, of Worcester. The officers of the company are: Francois X. Brunnelle, J. Alphonse Gervais and Rena O. Brunnelle. The capital stock of the corporation is placed at $35,000.

W. J. Smadecki, Bridgeport, Conn., has the contract for the plumbing in the new house which Alois Kirschner is erecting for Adolph Sherman on Connecticut avenue in that city.

Abner Podrat, Palmer, Mass., is building several new houses and has let the contract for plumbing and heating them to S. W. Lyon & Co., of that city.

Charles Phalen has the contract for plumbing the new Methodist parsonage at Milford, Conn. The house is modern in every particular and is fitted with the latest and most approved fixtures throughout.

Richard O'Brien, Lenox, Mass., has a gang of men at work remodelling the heating systems in the town-hall and central fire-station in that town.

Work has been started on a new house on Keeler avenue, Bridgeport, Conn., for Gertrude M. Terry. C. S. Eames & Co., also of Bridgeport, has the contract for plumbing and hot-water heating.

The Stoughton Co., Whitefield, N. H., has sold its plumbing, steam-fitting and tinning business to Keir Brothers of Lancaster, N. H. The new firm has transferred the headquarters of the concern to new and improved quarters in the Lane block on Union street.

John M. Gill, Waterbury, Conn., has the contract for plumbing in the new six-apartment house, which is being erected on Baldwin street for Roger O'Meara.

The committee in charge of the installation of a new steam-heating system in the Methodist church and parsonage at North Attleboro, Mass., has placed the contract with Charles H. Dillon.

Bids have been opened at the office of the supervising architect at Washington, for a heating system for the federal building at Windsor, Vt. The lowest bidder was the G. S. Blodgett Co., Burlington, Vt., whose figure was $5,600 and to whom the contract will probably be awarded. Other Vermont bidders were W. H. Bodine & Co., Bellows Falls, and S. A. Reed, Windsor.

Among the plumbing, heating and metal-working contracts which J. C. Ross, of Stamford, Conn., has in hand at the present time are: Plumbing and metal work on new house on Spruce street, for G. Farugno; plumbing in a seven-family house for Hugh Noack; plumbing and heating in new house of Henry L. Eckhard on Renwick street, all in Stamford.

A. E. Roderique, Farmington, Me., is installing a steam-heating plant in the residence of B. F. Stanley at Dryden, Me.

The contract for heating "Eastover" at Lenox, Mass., has been awarded to William B. Bull of that town.

Robert Johnson has purchased the plumbing business of S. V. Hole at Cheshire, Conn. Mr. Hole will return to Waterbury.

Plumbing Inspector Frank P. O'Donnell, Woonsocket, R. I., has a fight on his hands for he is being opposed for re-election by Willis E. Hope. The office of plumbing inspector is filled annually by joint ballot of the two branches of the city council on their first meeting of the new year. Mr. O'Donnell has held the office of plumbing inspector for some time and although there has been some opposition to his re-election in times past, no strenuous campaign, such as is being waged by Mr. Hope, has been known. There are also said to be other aspirants for the position, but the possibility of a sharp three or four-cornered battle is likely to keep them out of the field at least for this year.

Because of lack of funds the proposed ventilating and heating system for the Essex street school in Saugus, Mass., will not be installed at the present time, the matter having been indefinitely postponed at a recent meeting of the school authorities.

The ventilating system at the Vermont state house at Montpelier, Vt., which was recently installed at a cost of $35,000, is proving far from satisfactory and the members of the house of representatives have named a committee to investigate the matter and ascertain, if possible, upon whom the responsibility lies. At the time the appropriation was passed for the installation of the new system the representatives fully expected to find the building in first-class condition, so far as ventilation is concerned, when they arrived for the winter session, but they were disappointed.

Braman Dow & Co., Worcester, Mass., have the contract for making extensive changes in the heating equipment at the Union school building in Millbury, Mass.

So unsatisfactory has the heating and ventilating system in the new wings of the high-school building at Melrose, Mass., proved that the matter has been brought to the attention of the state board of education and they have asked the city to take some action to remedy the trouble. The new wings were opened for the first time this fall and an inspector recently found but one of the 16 rooms properly heated and several where there was not proper ventilation.

An informal decision has been reached by the special heating and lighting committee of the town of Leominster, Mass., on the proposed central station for all the Leominster town buildings and a favorable report will be submitted. Several architects are already working on plans for the building as proposed. The estimated cost of the station will be $25,000, and it is figured that it will pay for itself in ten years.

KNEW THE SYMPTOMS.

"What makes you think he had been to a drinking party?"

"He came home," sobbed the young wife, "wearing a phonograph horn for a hat."—Louisville Courier-Journal.

METHODS OF SEWAGE PURIFICATION.

In recommending to the city government of East Orange, N. J., the use of sprinkling filter beds, Harrison P. Eddy, of Boston, the consulting engineer retained by the city authorities, gives the following summary of the various possible processes, and the reasons for preferring the sprinkling-filter type.

Several methods of treatment, says Mr. Eddy, have been considered in connection with the Orange problem, among these being sedimentation of septic treatment without further purification; chemical precipitation; intermittent filtration through sand; and treatment upon sprinkling filters with preliminary and secondary sedimentation.

The effluent from the sewage-disposal works would naturally be discharged either into the Passaic river or the Hackensack river, both tidal streams with watersheds of 949.1 and 201.6 square miles area, respectively. The Passaic river now receives the sewage from this district, as well as from many other cities and towns located within its watershed. Its condition has been extremely offensive for many years.

The sewage can be passed through sedimentation-basins or septic tanks, and thus have removed from it the suspended matter, both organic and inorganic, so that deposits will not be likely to occur in the bed of the stream into which it is thereafter discharged. Such treatment would remove from the sewage about 50 per cent of the organic matter contained in it. The matters in solution and the finely divided suspended matter in the effluent would be about as susceptible to putrefaction as before their passage through such tanks. It is highly improbable that the sewage of all of the communities tributary to the Passaic river could be sufficiently purified in this manner to justify its discharge into the river. It has, therefore, seemed inequitable to consider seriously the adoption solely of either simple sedimentation or septic-tank treatment for the purification of the sewage of this district.

Chemical precipitation yields an effluent somewhat better than that produced by sedimentation or septic treatment, and where ample dilution can be had, this process may provide a suitable degree of purification. It is, however, expensive under most conditions, and partly for that reason, partly because of the comparatively impure effluent, it has been rejected, after careful consideration, as undesirable for adoption here under existing circumstances.

Intermittent filtration through sand beds yields, without question, the most completely purified effluent of any process in use for the purification of sewage. This process requires large areas of sand filters, which are not available in the vicinity of this district. To construct such filters would prove exceedingly expensive, and there seems to be no good reason for incurring this expense to provide for so complete a purification of the sewage. While the sewage should be so purified as not to contribute to putrefactive action in the river, there seems to be no necessity for carrying the process of purification to so high a degree as would result from intermittent filtration. For these reasons intermittent filtration does not appear to be a desirable method for use in this case.

The passage of sewage at comparatively slow velocities through filters composed of broken stone, cinders or other similar materials (but at very much higher velocities than would be possible with sand filters) causes such a change in the condition or character of the organic matter that it becomes much less susceptible to putrefactive action, and if the process is efficiently carried out, the effluent itself when stored for a considerable length of time (even in closed receptacles without access to the air) will not become putrid and evolve offensive odors. In other words, it is entirely practicable by this process to produce a non-putrefactive effluent.

The process which appears to be most suitable for use in this case is a combination of sedimentation or septic treatment for removing suspended matter in the original sewage; treatment upon sprinkling filters; and secondary sedimentation for the removing of sludge from the filter-effluent.

The suspended matter in the sludge should be removed as completely as is practicable before the sewage is applied to the filters. To accomplish this, it should be passed through suitable tanks in which the solid matters can settle, leaving a comparatively clear liquid to pass from the tank. This result can be obtained by the process known as "sedimentation," or by what is known as the "septic process." The only substantial advantage of the latter is that more or less of the sludge disappears during the process of fermentation going on within it, and the remainder is concentrated and somewhat changed in physical character and chemical composition. This is a natural result of the long-continued storage of sludge in the septic tanks, which are cleaned out at infrequent intervals, varying from three to four months to a year, or perhaps, under some circumstances, to a longer period of time. The sedimentation-process, on the other hand, is so carried out as to prevent, so far as practicable, the setting up of fermentation in the sludge, and therefore requires the cleaning of the tanks at comparatively frequent intervals, varying from 4 to 8 or 10 weeks. The quantity of sludge produced by the sedimentation-process is approximately five times that produced by the septic process.

This apparent advantage of the septic over the sedimentation-treatment can be overcome by withdrawing the sludge from the sedimentation basins and allowing it to putrefy and decompose in tanks designed for that purpose.

The effluent passing from the preliminary process is applied to the coarse-grained filters, or percolating beds, in the form of a spray. This may be accomplished by means of fixed nozzles placed at frequent intervals on the surface of the beds, or by a system of traveling distributors. Such nozzles, operated under a head of from 5 to 15 ft., produce a fountain-like spray, and the sewage falls upon the surface of the stones of the filter in fine drops. It gradually percolates through the filter, which is from 5 to 10 ft. in depth, and the organic matter contained in it is, during this process, gradually transformed into more nearly inert substances which do not add materially to the putrefactive substances in the river into which the effluent is discharged.

There are many forms of movable distributors, some applicable only to circular beds, consisting substantially of revolving arms containing large numbers of nozzles, and some which are applicable to rectangular beds, moving backward and forward over the beds, being driven by electric motors, or other power. The character of the chemical and physical changes which go on in the sewage is, however, the same in all cases, and within reasonable limits is not dependent upon the method of dosing or the depth of material of the bed.

The effluent from either septic or sedimentation-tanks, contains substances in three different physical conditions—namely, in suspension, in colloidal state and in solu-

tion. Colloidal matters are in a sort of pseudo-solution, being neither in solution nor suspension, but in a half-way condition, and are comparatively easily precipitated. It is also a fact that many substances in solution may be withdrawn from that condition during passage of the liquor through the filters. As a result of the physical condition of the impurities in the sewage, and of the passage of the water in thin films over the surface of the filtering material, considerable quantities of matter are withdrawn from the sewage and lodged in the pores of the filters. These substances gradually accumulate until they have collected in masses sufficiently large to be readily disengaged from the stones and washed out of the filters. The finer the filtering material is, the larger will be the quantity of these substances retained in it. It is also true that the finer-grained beds produce effluents superior in quality to those produced by the coarser-grained filters. The aim is to provide filtering material of such size that it will produce a reasonably stable effluent and at the same time contain passages sufficiently large to permit of the suspended matter, collecting on the surface of the stones, being washed out of the filter. If this relation can be successfully obtained, the filters should produce satisfactory effluents and yet be self-cleansing.

From what has been stated, says Mr. Eddy in conclusion, it is obvious that the effluent from percolating beds will contain comparatively large quantities of suspended matter. These particles will readily settle out, however, when the effluent is stored in suitable tanks. It is, threfore, advisable to provide secondary sedimentation-tanks for removing such substances. The organic matter thus removed, while fairly stable as compared with the organic matter in the original sewage, does decompose and in the absence of air become putrid. It further tends to reduce the available oxygen in the effluents and should for that reason be removed from them before their discharge.

To recapitulate, the process which seems most suitable for the purification of the sewage in this district, is a combination consisting of sedimentation to prepare the effluent for the sprinkling filters, filtration through percolating beds, to purify the sewage and make the effluent stable, and secondary sedimentation to remove the suspended matter from the effluent before its final discharge. Such a process should yield an effluent which will be non-putrefactive and will therefore not contribute to the putrefactive conditions in either the Passaic or the Hackensack river. This report is, therefore, based upon this method of treatment.

Tired of Strangers.

A handsome woman who had been so unfortunate as to find occasion to divorce not one, but several husbands, was returning from Nevada, says the New York Times. In Chicago she happened to meet her first husband, for whom, by the way, she always has entertained a real affection.

"Upon my soul, if it isn't Charlie!" exclaimed the ex-wife, cordially shaking hands with the gentleman whose name she had formerly borne. "I'm awfully glad to see you, Charlie!" Then, after a wistful expression of regret had come to and been banished from her countenance, she added:

"Old chap, I've often wondered where you were and what you were doing. It was too bad we didn't get on better together. I hope your experience hasn't been as unpleasant as mine. I'm just sick and tired of marrying strangers!"

THE STUDY OF UNDERGROUND INSULATION.*

By C. H. Staten, Cleveland, O.

It has been an accepted fact for some years past among engineers and, in fact, among all who have anything to do with either the expenses for or operation of steam plants, that the central station is without doubt the most economical. It will be, I think, just as readily admitted that no matter how fine the equipment placed in such a plant may be, the true measure of efficiency from the standpoint of actual net returns in dollars and cents, for to such a basis everything in modern times is referable, depends on the type of insulation used for the protection of the pipes carrying this gaseous gold to the mint.

In considering this subject it will be said by all without question that the main losses to be encountered in a central-heating plant are from the pipes run underground rather than in any other section of the system, and I might say that in the case of from 50 to 60 per cent of such plants which at the present time are not representing a profitable investment, the losses incurred by improperly protecting these arteries, the underground lines, are entirely responsible for their discouraging condition. This has several sides which will be taken up in their proper sequence.

In the early underground work many and various were the forms used in an attempt for the protection of these underground pipes, chief among which was the crude wooden box in which the lines were placed, with and without insulation, this latter for the most part consisting of sawdust, burlap, newspapers or, in fact, any material available which in the individual mind possessed any degree of suitability. Such pipes would have shown better results both from the standpoint of efficiency and durability had no attempt at insulation been made, and the pipes merely enclosed in the box. Then came several efforts toward the protection of the box by waterproof paper, waterproofing compound, creosoted lumber, etc. To all, however, judging from the experience gained in the past decade, the futility of such attempts was apparent. Moisture from without, heat from within, and the natural disintegrating effect of the surrounding conditions, enhanced by these ever-present agencies, brought about the next step toward perfection—the brick trench with the creosoted plank top. This again was another step toward protection, and, as in the case of its predecessor, this type was used both with and without insulation, though here the types of non-conductors sanctioned by previous use were in some measure replaced by mineral wool. The development of this brick trench did not prevent many of the distributors of heat in those days from still continuing the use and installation of the wooden box construction, for though the brick trench beyond question was the more durable of the two, still from the standpoint of either insulation or protection, nothing was gained to offset the higher cost of the sewer construction. Aside from the fact that the wooden cover was a source of continual trouble, it was found that the trench itself acted more as a drain for the immediate vicinity than as a shield against just such condition. This also had the effect of nullifying these attempts at insulation, as the materials employed were such as to draw the water at the bottom of the trench by capillary attraction around the pipe, thereby changing their entire status

*Paper read before the National District Heating Association at the Second Annual Convention, Toledo, O., June 1, 2 and 3, 1910.

in the case. In this type, therefore, as formerly, it would have been better to eliminate the attempts at insulation for the same reason. Furthermore, these trenches, as then constructed, open as they were at both ends, formed ideal breeding places and favorite promenades for vermin of all kinds.

The next form to be evolved was the brick trench, with a brick arch in place of the creosoting plank. While again the cost was increased, it was still without any appreciable advantage, from all practical standpoints. The materials used in this construction were not moisture proof.

The objections applicable to these forms are just as applicable to the more modern concrete-trench construction, and this has, like its predecessors, gone down to the days of antiquity in the minds of modern engineers.

The next steps bring us to the more modern forms of protection and insulation for underground lines, such as the expensive concrete tunnel, the better forms of built-up wood-coverings and tile-conduits.

In the case of the first mentioned, the concrete tunnel, a great deal may be said pro and con. Of the arguments in its favor, the individual conditions must govern its size and methods of construction, and these in turn, in a sense, form an index to its degree of efficiency from the economical standpoint. It may be granted that, properly constructed and thoroughly waterproof, such a tunnel forms an efficient protection for the enclosed pipes, still holding to our original subject, we must face the problem of insulation. While these developments have taken place, all tending toward complete protection, the manufacturers of insulating materials have kept pace with the times and made forms of covering to suit every condition, whether underground or overhead, whether high or low pressure, whether outdoors or indoors. Underground work, however, has many peculiar phases, and it is essential that in tunnels the best class of covering known be used. While there are several types on the market, varying in efficiency from 70 to 85 per cent, the selection of sectional covering must receive careful attention in order to secure such types as will represent the highest possible efficiencies for the greatest length of time. It must be further borne in mind that tunnels, for the most part, are in use only for a certain part of the year, and during their period of disuse will, no matter what their construction, gather moisture. This being the case, it is further seen that such efficiencies must of necessity be entirely contingent upon a further course of protection given the covering itself, flanged pipe being generally used in tunnel construction, it is essential that these radiating surfaces represented by the flanges, which are commonly left uncovered, be taken into consideration, and for this reason the covering manufacturers provide removable flange-covers, which permit ready access to the flanges in case of need, and may be re-applied without deterioration. While it is essential that every possible square inch of heated metal be properly covered in tunnel construction, it is necessary that a certain amount of pipe-surface remain bare in order to provide at the rolls a bearing and allowance for the ever-present factors of contraction and expansion.

While it is possible to obtain efficiencies up to 85 per cent by the use of sectional coverings in tunnels, these, as a rule, must be purchased with what money is left after the tunnel has been built and the pipe installed. For that reason, in the majority of the existing tunnel installations, such efficiency, which may readily be considered the maximum of possibility in such construction, are not often realized. While such a construction affords ready access at all times to the piping, and a passageway for the workmen between buildings, it also permits a free interior circulation of air which, to say the least, is not beneficial.

The increasing use of low-pressure and exhaust steam in central-plant work has made essential the use of still better insulating mediums than any sectional form of covering at a lower initial cost of installation, and this demand brings with it the necessity of improvement in another phase of the underground construction which is in all such work no less important than the main feature of insulation itself—the protection of such insulation from moisture. These conditions demand a form of protection from the insulating material which will insure a permanency of the installation, and an insulating material within this protective covering no less staple. Even with such a combination an efficiency should be obtainable of from 90 to 95 per cent. This then makes it necessary to regard both protective covering and insulating mediums as one unit, not as two separate considerations. Such a problem is answered by the use of a tile conduit, made up in half sections with independent supports for the enclosed pipes and provide ample room for sufficient insulation to obtain the high degrees of efficiency so demanded. The protective covering, in this case the tile, must of necessity be of the finest quality obtainable, and still regarding the insulation and the protection as a unit, just so must the insulating material used be of equally high standard, and absolutely indestructible from every point of view. In such a construction, the insulating medium used is composed of asbestos fibre and ground sponge, known as asbestos-sponge conduit-insulation. Such a proposition provides no opportunity for interior circulation of air, but on the contrary possesses myriads of minute air spaces, which play a very important part in the qualities of insulation, and at the same time, in view of the elastic nature of such an insulation, the pipes are permitted to expand and contract quite freely without detrimental effect to either the conduit or the insulating medium. It can be readily seen by everybody that a proposition of this nature, if properly installed, will provide a permanent as well as an efficient underground system.

BUSINESS CHANGES.

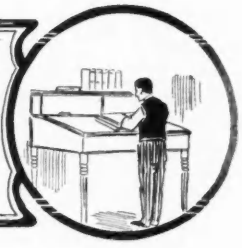
Hewett & Feeney, plumbers with offices in the Hotel Boyer Bldg., Pittsburg, and who recently opened a branch in Chester, W. Va., have made a change. Mr. Hewett, who went to Chester, has purchased the interest of his partner in the Chester business, while Mr. Feeney will remain in exclusive control of the business in Pittsburg. At the Chester office plumbing, gas fitting, steam and hot water heating are being made a feature, while a similar line of business is carried on at the Pittsburg office. The Chester plant is the largest plumbing establishment in Hancock County, West Virginia.

T. M. Berry, who was formerly in the plumbing business in the East Liberty district, Pittsburg, Pa., and later employed by the plumbing firm of Charles M. Swift, will open a modern plumbing establishment in Wilkinsburg, Pa., in the near future.

The sanitary committee of the Springfield, Mass., city council has recommended that the park commissioners be authorized by the city government to erect a waiting room and public-comfort station on the park property in Court square, the waiting room to be above ground and the comfort station underground. Rough sketches have been prepared of the proposed structure of 20 x 30 ft. above ground with separate sanitary arrangements for men and women beneath the surface. It is estimated that such a structure can be erected at a cost of about $9,000. The park department is not opposed to the proposition and it is likely to be favorably acted upon on all sides.

BUSINESS MANAGEMENT

NEW METHODS FOR OLD



A FEW JABS FROM SIDE-DOOR JOGGINS.

Editor "Domestic Engineering":—Seeing that so many of the fellows are developing stunts in the writing line, I thought that I'd try my luck for once, and enclosed you will find a few thoughts, which I hope you will think worth printing:

1. "You ought to see the job we done for McGinty." A boss don't give a cuss for the job executed 1,000 miles away. Quit bragging. What he wants is to get action at once for the mazuma he is sinking in your hide at the present time.

2. If I was a good collector and could corner, in one bunch, all the cash I've handed out to assist a lot of bums through difficulties, I'd not work any for the next year. Say, I don't object to shelling out when it's a case of honest distress, but let's shut down on the liberal act and let those who won't work stop eating for a while. May be they will then be ready to do a turn or two.

3. A "knock" is a local boomerang. It is one of the few things that have proved their ability to "come back." If you want to get rapped good and plenty, just start a little knocking bee and note the results.

4. The smile that won't come off brings $$$$$, where the frown that's always on gets this: 00000.

5. I heard a fellow say the other day, "Why, I've got a hundred friends all over this town." Say, you can't travel on friends always. You need a few "iron men" in your pocket. That's it.

With best wishes for the paper, I am,

Yours truly,

"Freckles."

WHAT VOCATIONS ARE OPEN TO THE JOURNEYMAN?

Assuming that there are in the neighborhood of 20,000 masters in the country and that, on the average, there might be at least three journeymen to the shop, we have an army of somewhere between 60,000 and 70,000 craftsmen. Now while it would seem that most of these workers had it in their mind to, some day, become masters it will be seen that a large number never do so. Neither do they stay forever in the craft as it is not overburdened with old men, nor do they die in their youth and beauty.

What then does happen to the many who would seem to have left the craft? This is a question that we wish to ask for the serious consideration of all. What pursuits in life are open to the journeyman, if he does not see fit, for any particular reason, to become a master and wishes to drop his trade?

What can he do best (other than his trade) and what will bring him in as much money, or more?

Can you give some actual instances of men who have left their trade and succeeded at other pursuits? We do not care for their names at this time and place, but would like the benefit of their experiences.

We believe that there is a chance for some mighty interesting and instructive letters in the questions and trust that you will send in the copy at the earliest opportunity.

COMMENTS ON "GETTING NEXT TO YOUR VALUE."

Editor "Domestic Engineering":—The article, "Getting Next to Your Value," which appeared in a recent issue of your helpful journal, is good advice; and next to it, and right in line with it is: "Increase Your Value." Take the average fitters and helpers to-day, who may be first-class men with the tools, and who can do any piece of work after it has been explained to them by the foreman, if they are given blue prints or are sent to a job with the meager information that it is a steam or hot-water job, and they are told to lay out their own pipe sizes, it is quite certain that they will be stuck, or else just make a bluff at it, and perhaps come out all right, though the chances are that it would have to be remedied some before it is accepted.

Now I argue, that if all masters would encourage their men to read the trade-magazines, and furnish them free of charge to the men, the masters would get a big interest on the investment. Then, if the men themselves were wise, they would buy the best works that are printed on the subject they are interested in, and get next to the technical end. They would soon be of greater value to the master, and it would not take him long to find out that such men were well-posted, and they would be pushed ahead. Or get next to some good correspondence school (I can see the sneers and hear the laughs that this statement will bring from some), and it will surprise you how fast you can advance above those that do not take any interest in such a course. You will then soon be in a position to read any book or article on the subject you are interested in, and what is better, thoroughly understand it, which is the trouble with many of the books that are printed to-day. They are technical in terms and the majority of their readers are not educated enough to understand them. I note, that even Mr. Pierce's articles, which are written in the plainest terms ever used by any writer I have yet read, is not always clear to all your readers. Therefore I say: Fellow craftsmen, get educated; not only because it helps the bosses' business, but because it helps you most. No one can take away your education, once you get it, it increases your value, and puts you in position to demand and receive higher wages than the man who is not educated. You will be the last man to go when the work is slack, and the office will be sure to keep in touch with you all the time.

All that has been said above affects the helpers more than any one else in the trade, because the chances are that you cannot get to see or work on all the different kinds of jobs in the three to five years the union requires you to serve as an apprentice. And what you read will help you to understand your job better and teach you things you never could get from some fitters, simply because they did not have the opportunity to learn it, perhaps, or they did not have the inclination. Again, some fitters are slow about telling any one what they know about the business. So get wise, as to why certain things are done and what for. Don't wait till you get on a job where it is to be put in. Read up on it, see a picture

of it, then when you get to do that certain thing, it will come that much easier.

Yours for education,

Little Rock, Ark. A. J. Purcell.

ANOTHER BUNCH OF QUESTIONS FOR OUR READERS.

That line of questions regarding the ownership of the tools produced some mighty interesting letters from the craft and we take this occasion to express our appreciation to all who contributed to these columns. Our question-man seems to have gotten on deck again this week as he has handed over a bunch, from which, he says he expects good **results.**

We are aware that these will come to you along the time that you have filled up on the National bird, but you should then be in just the "good spirited" mood to turn out some mighty interesting reflections. Let us have them while that "spirit" of the Holiday season still moves you. The following are the questions:—

1. In your experience as a journeyman you have naturally had a chance to apply for positions at your trade at different times. Probably you have done this in several different cities and states. Now what are three of the most common mistakes the average journeyman makes right off the reel, as soon as he steps into the shop and makes himself known to the boss? He's just hitting for the job, remember.

2. After one has secured a job with a new firm, what are the three most important points to be considered, in your estimation?

3. We have observed a statement something like this not many months ago: "The people in the hardware business, who are running plumbing and steam-heating in connection with the same, do not employ as good mechanics as the regular plumbing shops." What has been your experience and observation along this line? Would you work for a hardware firm? If not, why not? Please state the reasons for your position on this question.

NEWS FROM OHIO.

Bids opened by the board of trustees of the Ohio State University at Columbus, O., Dec. 8, for the heating, ventilating and plumbing of the proposed library building to be erected at a cost of $225,000 were as follows: Heating and ventilating, The William H. Conklin Co., Columbus, $20,818; Samuel Esswein Heating & Plumbing Co., $19,934; Fitzpatrick & Hoepfner, Columbus, $18,988; The Hofman-Conklin Co., $21,307; The New York Blower Co., New York, $18,052. Fitzpatrick & Hoepfner were awarded the contract. Plumbing: The W. H. Conklin Co. $8,148; Samuel Esswein Heating & Plumbing Co., $8,617; Fitzpatrick & Hoepfner, $6,985; The Hofman-Conklin Co., $7,963. The award was made to Fitzpatrick & Hoepfner.

Architect F. S. Gleichauf, Columbus, O., has awarded the contract for plumbing on the Munshower residence, being erected on Cleveland avenue, to Wuellner & Theado, Columbus.

The managers of the Ohio Penitentiary at Columbus, O., at a recent session adopted the plans for the heating by steam of a new block of cells being erected at the institution. The cost of the heating system will be about $18,000.

The city council of Columbus, O., has adopted the Lewis ordinance by a vote of nine to four. The ordinance provides for a stringent examination of all plumbers who work within the corporate limits of the city. Councilman Ross objected to the ordinance on the ground that it prevented a builder from buying his own materials and hiring the plumbers by the day. He said that he believed in the plumbing code and stringent regulation of plumbing. Councilman Sherman objected to the ordinance because the examining board was not constituted to suit him.

The heating plant at the Ohio penitentiary in Columbus, O., has been connected up with the boilers in the new power-house and the large prison which has been heated with considerable difficulty up to the present time is now well heated. The work on the new power-house was practically completed six weeks ago. It was then discovered that the cement used around the boilers did not set right and the contractors tore it out and used a different kind of cement. In the meantime the old boilers were called into service to heat the prison.

NEWS FROM PITTSBURGH AND VICINITY.

There is very little new work going on in the Pittsburgh district just now, although a number of fairly good-sized contracts are being bid on by local plumbers.

The Beechview Plumbing Co. has received the contract for the plumbing work in the new Brookline residence of A. S. Digby.

On the north side, the Enterprise Plumbing Co. has secured the contract for plumbing James Brennen's new residence.

A good contract was placed at Uniontown during the last fortnight by James E. Cotton, who is erecting a business block there. Charles Titus, the well-known plumber of that city, was the successful bidder.

At Monongahèla, Pa., 30 miles south on the Monongahela river from Pittsburgh, the well-known plumbing firm of Myers & Raible dissolved December 1, Mr. George J. Raible retiring. As a result of this change, a new firm has been created, for Mr. Myers has become associated with his brother, Charles Myers, for many years connected with the Peoples National Bank of McKeesport, Pa. Plans have been prepared to do a more extensive business, as the building now occupied by the "old and new firm" will be enlarged, and an addition of 18 ft. built to it for the accommodation of the new plumbing firm.

PLUMBER FINDS DIAMOND RING IN SEWER.

Covered with slime of the sewer in which it had rested for seven years, a diamond ring, valued at $125, the property of Mrs. W. J. Sowles, was recovered from a drain-pipe under the J. W. Burroughs home, 304 East Church St., Marshalltown, Ia., last week, by C. L. Diffenbacher, a plumber in the employ of Toombs & Downs, 9 N. First Ave., Marshalltown.

The recovery of the jewel, which was the setting of an engagement ring, was the result of a search made for it by Mr. Diffenbacher, who had been called to the Burroughs home to do some repairing. While doing the work the conversation with members of the household turned on the losing of valuables down sewers and of valuables that had been recovered from them. The plumber was told that Mrs. Sowles had lost her diamond ring down the sewer in the house and that it had never been found. Prompted by the thought that he could perhaps find it, the plumber took up a section of the floor over the sewer and uncovered the trap. Cleaning it out he found the ring in the sediment. The jewel and ring were none the worse for their long soaking in the sewer and when cleaned were practically as good as new. The ring was turned over to Mr. Burroughs who sent it to the owner in Sterling, Ill., where she is now located.

Pride Well Founded.

"Do you still want this genealogy?" asked the man who digs up such things.

"Sure, I do. Why not?"

"Well, I've found that your great-great-grandfather was hanged for murder, your great-grandfather was imprisoned for robbery and your grandfather was tarred and feathered for beating his wife. That's not a very proud record, is it?"

"I should say it is. Shows how my family is getting better each generation. I'm an improvement on the whole bunch—never been in jail yet. Let me have those records, I'm proud of 'em!"—The Tradesman.

PUBLIC-COMFORT STATIONS.*

W. E. Hinsdale, New York City.

I am called upon to give you a few leaves out of my experience in the matter of general and public plumbing fixtures and more particularly those needed for such installations as public-comfort stations.

The subject is worthy of the earnest thought of sanitary engineers everywhere, and I am glad to say that in the last few years attention has been given to it, that is bringing fruit.

The first comfort-station in my knowledge in this country I saw first in New York City in 1876. It was for one purpose only and made by an English firm. I can see it now in my mind's eye. A thing of rough iron—work, above ground, poorly screened, curvilinear in shape, and reminded me of the mazes we used to draw when children on scraps of paper to while away the time. One could always find it just by following his sense of smell.

It, however, was a start and by its own ugliness and unsanitary features, forced on the public the necessity of improvement.

A resume of the advance made since that time would be useless and I will bring my remarks up to date and call your attention to what I can consider the necessities of such installations.

The first matter to be considered in specifying fixtures and buildings for public use is this fact. The great majority of the users have and will take no interest in the care of the accommodations furnished them. They have no sense of ownership, in fact, seem to think that it is up to them to appropriate anything that can be detached.

Next, consider that the class of employees who can be secured to care for these places are of a generally low order and no matter what the regulations are will not keep fixtures in proper shape.

Then note that the location of public utilities of this class are always put as much out of the way as possible, frequently, indeed, in the majority of cases, they are placed underground. That moisture is always present in the rooms to the detriment of anything in the line of wood-work or high finish.

With these points in mind the engineer will see that he must eliminate all superfluous finish and parts and install fixtures that will, as near as may be, take care of themselves.

In making the specification for the fixtures for all the stations on the line of the New York subway, the engineers had some of the foregoing ideas in mind but at the same time did not get all the results desired for the reason that experience with the public in the use of high-grade sanitary appliances was, to say the least, young. They have found to their regret that the highly finished parts, that could be removed, disappeared about as fast as they could be installed. They have found that pay-rooms were the play of the users, unless some one was constantly on watch. They and the speaker, however, have gathered valuable experience and without further reference, I will give you in few words my ideas on the class and style of fixtures and surroundings needed in comfort-stations or places where the care of them is largely up to the general and careless public.

Avoid at all times high finish on any metal work. Galvanized-iron pipe-work and brass-work that has had only the first smoothing to take off the sand surface should always be used and painted with good enamel.

Avoid all wood-work of all kinds. Use only marble, slate or glass. Keep partitions off the floors. Doors are not required for stalls. If, however, they are used, they should be of galvanized iron and painted with white enamel. Floors should always be made of non-absorbent material. Concrete is not as good as asphalt. The floors should be made to drain to large floor, drains having removable covers. The entire room should be so designed as to be readily washed down with a hose.

As to fixtures:

All closets should be without wood seats. The rims should be made seat form and integral.

The class of closet may be either wash down or siphon. Washout should not be used. No closet with contracted passages should be used. My own ideas of a closet is one of heavy vitreous ware with the floor flange carried back to the wall and extended up on the wall to the height of the closet covering all connections; or, a more modern closet, that is attached to the wall and free from the floor. In either case there is no space around the closet to collect dust and in the case of the closet attached to the wall and free from the floor, there is no place for cleaning that cannot be reached by a mop.

The flushing of the closet should be by means of a push-button through the rear wall, operating either a flushing valve or a cistern, the rear wall of stall being far enough forward of the building wall, or, when in double battery, the rear walls of stalls being far enough apart to allow easy access to fittings that, in such an installation, are entirely out of the reach of the user. An installation of this kind would present to the eye of the user nothing but a heavy piece of vitreous ware and a button in the rear wall.

I do not approve of automatic fixtures of any kind as experience shows that they are continually getting out of order. You can depend on the user flushing the closet, or your attendant will see that it is done.

The best type of urinal for this use is the porcelain stall extended down and into the floor. The cheapest of the class are those placed between marble or slate partitions and may be had in white or buff ware. They should always be made with integral drip-lip and the floor sloped to the urinals, forcing all spatter to flow into the receptor of the urinal.

There are various types of urinal-stalls made meeting the requirements. Partitions may be had of porcelain in some of the styles; again they may be made to be placed without partitions but with extended sides and to set free.

The flush should be the same as suggested on the closets, namely, a cistern or flushing valve out of the user's reach and a push-button through wall and above the stall.

The lavatories should be of vitreous ware of the plainest pattern, and set free from the wall or with integral back against the wall depending on conditions. A compact fixture presenting the minimum of metal work above the base and all fittings below the basin made up as close and permanently as possible and of a finish suitable for painting. The supply of course should be self-closing. I would use an open outlet, the water wasting as fast as used.

Slop sink for porters' use should be placed in a separate room and not where the public users can get at it.

The matter of ventilation, back air, sewage disposal, etc., are not within the province of this paper. The ideas given

*Read at the fifth annual meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers, held at Trenton, N. J., Jan. 20-22, 1910.

are on those parts of the work that the public sees and uses.

And as a resume of this paper, I would sum up as follows:

Make simplicity the prime factor in fixtures and surroundings.

Make solidity of appliances an imperative factor.

Make the removal of parts as hard as possible.

Make cleaning with the least amount of labor the dominant feature.

Then, these ideas accomplished, you have made the cost of up-keep a quantity more nearly proportionate to the efficiency of the installation.

NEWS FROM WISCONSIN.

L. J. Dignan and Wm. Schultz, Norfolk, Nebr., have dissolved partnership. Mr. Dignan will continue the plumbing business at the same location, 118 S. Fourth St. Mr. Schultz will open a plumbing establishment at Creighton, Nebr.

John T. Wilson has opened a plumbing establishment in the Condon building on Third street, Dalles, Ore.

At a recent meeting of the Douglass county board at Superior, Wis., it was decided that a new heating plant was needed in the county poor-house and bids will be immediately taken for its installation. The house is also to be wired for electric lights.

The board of education of Waupaca, Wis., has approved plans for a new high school building to be erected in that city at a cost of $50,000. The plans call for the latest systems of heating, plumbing and ventilation. It is proposed to have the structure ready for occupancy before the beginning of the next fall term of school.

At a recent meeting of the Germania Society of La Crosse, Wis., it was decided to issue bonds to cover the expense of the installation of a complete new heating system in its hall.

NEWS FROM PITTSBURGH AND VICINITY.

Indications during the last fortnight point to a busy spring among the plumbers and heating contractors of the Pittsburgh district. In the suburbs there will be considerable building, while in the city proper a number of business houses are to go up.

Information has been received here that the Keith Circuit Co., of New York, plans to build a new theater in Toledo, O., and bids on the plumbing and heating will be entered by contractors of this city. The general contract for this new theater has been awarded R. H. Howes Construction Co., New York, N. Y.

Bids on the plumbing are now being received by Architect T. E. Cornelius, of the Fulton Building, for the new $35,000 dwellings to be erected at Duquesne, Pa., by a Mrs. Webb.

Twenty two-story houses are to be erected by the Penn Gas Coal Co, at Irwin, the contract having been let to J. E. Meyers of Irwin. Plumbing has not been let.

The Pittsburgh Heating Co. has been awarded the contract for work on the Dr. C. H. Hoffman $20,000 apartment house.

Schwarzenbach-Huber Co., of New York, have awarded the heating contract for their new $50,000 silk-mill at Hollidaysburg, Pa., to Mulch Bros., of Hollidaysburg.

Plumbing and heating for the Casey improvements at Sheridan was awarded Kountz, Fleming & Co., Pittsburgh.

The Interstate Heater Co. of Cleveland, O., has been organized with a capital stock of $100,000. It is possible that the new concern will have representation in this city.

The Sewickley Plumbing & Heating Co., Sewickley, Pa., secured the contract for the $4,000 residence for William Neely at Sewickley.

At Ford City, Pa., the Folk Plumbing Co. secured the work on a $14,000 church and parsonage being built at Ford City.

Plumbing work on the new $50,000 silk-mill being built at Hollidaysburg, Pa., will be done by J. W. Haines & Co., of Altoona, Pa.

A. W. Mellon, of the Mellon Banking Co., will erect a $45,000 two-story restaurant in Diamond St., Pittsburgh. A building permit has been issued, but not all the contracts have been awarded.

At Ambridge, Pa., south of Pittsburgh, notice has been given that the partnership formerly existing between E. R. May and James C. Doyle under the name of the Ambridge Hardware & Plumbing Co. has been dissolved and that Mr. Doyle will remain in charge. Immediately following this change a co-partnership was formed between Mr. Doyle, L. M. Ditz and W. B. Rinehart, who will continue to conduct the business. The change was effective a fortnight ago.

NEWS FROM CAMDEN, N. J.

Congratulations were in order at the last meeting of the Master Plumbers' Association in Camden, N. J. Bob McIntosh of the old guard recently took unto himself a wife. Mrs. McIntosh was formerly Miss May Ruth and she is very popular.

Mr. Leathwhite, the Camden master plumber who has been suffering from nervous indigestion, is reported to be recovering.

Jim West, chairman of the entertainment committee of the Camden Master Plumbers' Association, has a theater benefit on for January 16, 1911, and if every plumber in Camden doesn't attend that night it won't be Jim's fault. They have had to place an extra operator in the 'phone exchange attending to Jim's calls. A man giving the attention that he does should be encouraged. Committee work is not always a pleasant job.

Harry Farrell, the state vice-president, leaves the first of the year for a trip up state in the interests of the association. He has five different towns to organize and is in hopes that he will have more. "Hap," as he is known, is there with a smile and a good word for everybody. No Knocks with him. We are in hopes to see him the president of the state association some day. He is very popular in the upper end of the state.

The master plumbers were very much surprised to hear of the death of Mr. Hollingsworth, chief engineer of the water department. The deceased was a friend of the master plumbers for he was the only one recognizing the association. He was the originator of the plumbers filing bond, by means of which no plumber, unless registered and bonded, could do work in the city.

GOVERNMENT RECEIVED MANY PROPOSALS.

The following bids have been received by Supervising Architect James Knox Taylor, Treasury Department, Washington, D. C., for the installation of a heating and ventilating system in the new postoffice building in New York City:

G. A. Suter, 108 Wooster St., New York City, $185,700; time, November 1, 1912.

Thompson-Starrett Co., New York City, $185,770; time, October 15, 1912.

E. Rutzler Co., 404 E. 49th St., New York City, $182,741; time, November 1, 1912.

Blake & Williams, 24 Barrow St., New York City, $189,878; time, 18 months.

Lynch & Woodward, Boston, Mass., $179,770; time, October 1, 1912.

S. Faith & Co., Philadelphia, Pa., $234,920; time as specified.

Evans, Almiral & Co., 281 Water St., New York City, $199,450; time, 15 months.

Gillis & Geohegan, New York City, $195,600; time, November 1, 1912.

Hoben & Doyle, 21st and Pine Sts., Philadelphia, Pa., $190,000; time, December 1, 1911.

Baker, Smith & Co., New York City, $165,546; time, 230 days.

COULDN'T TRAP HIM.

The mother of four daughters, one of whom had recently married, cornered an eligible young man in the drawing room. "And which of my girls do you most admire, might I ask?"

"The married one," was the reply.—Judge.

THE METAL MARKET

PIG-IRON AGAIN DULL.

The few orders which have been placed for pig-iron have been for small amounts ranging from 100 to 500 tons. One New York State foundry is negotiating for about 1,500 tons and another foundry in New Jersey has inquiries out for 1,000 tons. These, however, are the only orders of importance in the field. It is evident that the blast-furnace interests here decided to curtail and probably a number of furnaces will go out of blast this month. It would not be at all surprising if the blast-furnace production during December should fall off as much as it did during November. It is probable that notwithstanding the falling off in production last month that at least 200,000 tons of iron were added to stocks. Prices show little change and are as follows:

No. 2 Southern foundry, Birmingham	$11.00 to $11.50
No. 1 Northern foundry, New York	15.50 to 15.75
No. 2X Northern foundry, New York	15.00 to 15.25
No. 2 Plain, Northern foundry New York	14.50 to 14.75
No. 2 Northern foundry, Chicago	16.00 to 16.50

TIN MARKET AGAIN HIGH.

The syndicate which controls the tin market is able to manipulate prices as it sees fit. During the week tin in wholesale lots reached a new high figure on this movement selling at 38.55 cents. Buying has been very quiet and consumers are only taking metal as it is needed. Stocks are low both in America and in Europe and there is no premium for prompt deliveries.

LEAD.

The market has softened slightly in the West. Last week lead could not be obtained under 4.40 cents St. Louis. This week sales have been made in that market at 4.35 cents. In New York price is unchanged at 4.50 cents.

SPELTER.

It is felt that a break is about due. The price of 6 cents, which had ruled for some weeks, is considered artificial and it is evident that some of the holders are getting tired of hanging on at this time. Spelter can be had in St. Louis at 5.70 cents and in New York at 5.85 cents.

OLD IRON.

The market is very dull and prices are more an indication of the feelings of buyers and sellers rather than figures at which actual transactions have been made. Quotations are as follows:

No. 1 yard wrought, long	$11.00 to $11.50
No. 1 yard wrought, short	10.50 to 11.00
Machinery cast	11.50 to 12.00
Wrought pipes and tubes	9.50 to 10.00
Wrought turnings	5.50 to 6.00
Cast borings	5.50 to 6.00

COPPER MARKET EASIER.

The sellers of copper expected business to improve after the publication of the Copper Producer's statistics. There was no improvement in the demand and in consequence prices have eased off. Electrolytic, which sold at 12.87½ last month, is now being sold at 12.75. Consumption abroad is good and consumption in the United States seems to be as satisfactory as it has been during the last few months.

HOW THE GREATER PORTION OF COPPER IS SOLD.

The marketing of a great proportion of the world's copper supply has been concentrated so that at the present time it is in the hands of a comparatively few people. This is particularly true of the copper which is mined, smelted and refined in the United States. Included in both the smelter and refinery production of this country is copper produced in South America, Australia, Japan, Africa, Europe, Canada, Mexico, and, in fact, every producing country in the world.

The sale of copper in the United States is an industry in itself and has closely allied with it both the smelting and refining of the metal with an annual yield approximately 1,500,000,000 pounds.

There were but few important changes in copper selling contracts during the past year, and those that did occur were for the most part due to change in control of the mines involved. A year ago the United Metals Selling Company was handling 536,000,000 lb. of copper annually; now it is marketing 10,000,000 lb. less. Through the purchase from Senator Clark of his Original mine by Anaconda, the United Metals gained the selling of 15,000,000 lb. additional copper per year, formerly sold by the American Metal Company. The loss by the United Metals Selling Company of the Boston Consolidated copper, which a year ago amounted to some 20,000,000 lb., together with a falling off in the Utah Consolidated output and smaller receipts from Lake Superior, more than offset the Original mine's gain.

The most remarkable feature during the past two or three years has been the rapid advance by the American Smelting & Refining Company, which is now handling at the rate of 302,000,000 lb. of copper annually against but 150,000,000 lb. three years ago. The greatest loser through the Guggenheim's gains has been the United Metals Selling Company, for it first lost the Utah Copper Company output, then amounting to about 60,000,000 lb. a year, and has now lost the output of the Boston Consolidated, which is controlled by the Utah Company.

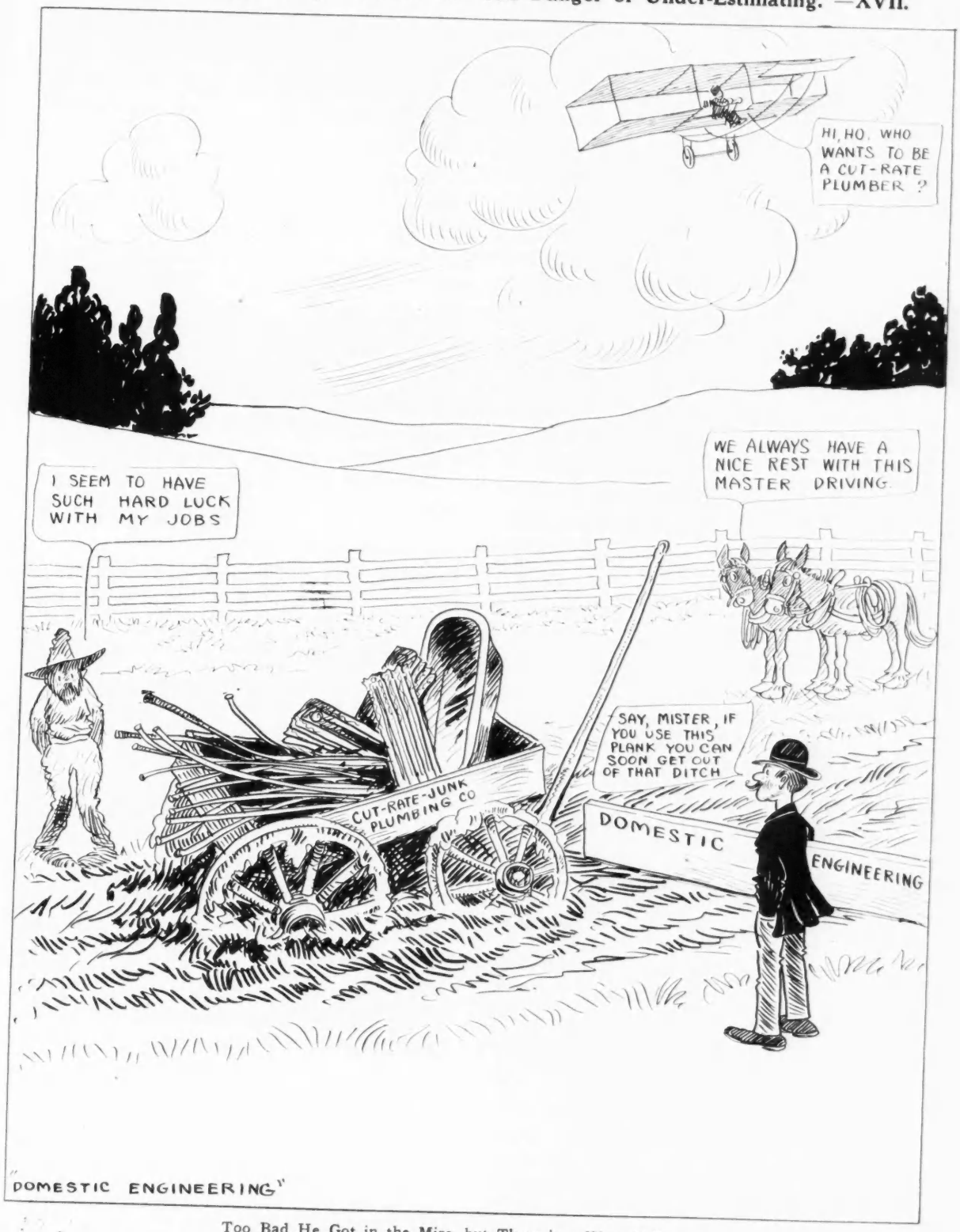
There have come back into the producing ranks two companies which were formerly small factors, the Teziutlan Copper Company of Mexico, from which a 15,000,000 pound production is expected, and the Consolidated Arizona Smelting Company, which should produce 6,000,000 pounds. In each instance the agency formerly handling the business will again market the copper, the American Metal Company caring for the Teziutlan output, and L. Vogelstein & Company looking out for the Consolidated Arizona.

The Ohio Copper Company during the year entered the producing ranks and is now contributing about 10,000,000 lb. of copper. The mill product of this is shipped to the American Smelting & Refining Company for treatment.

The Sale of Calumet & Helca copper has for years been put through the New York office of Charles Raht. Mr. Raht also markets the product of Allouez, Superior, La Salle and Centennial companies, subsidiaries of Calumet & Hecla, and also the small yield of the Victoria Copper Mining Company. The United Metals Selling Company continues to handle the output from four Calumet & Hecla subsidiaries, Osceola, Tamarack, Isle Royale and Ahmeek.

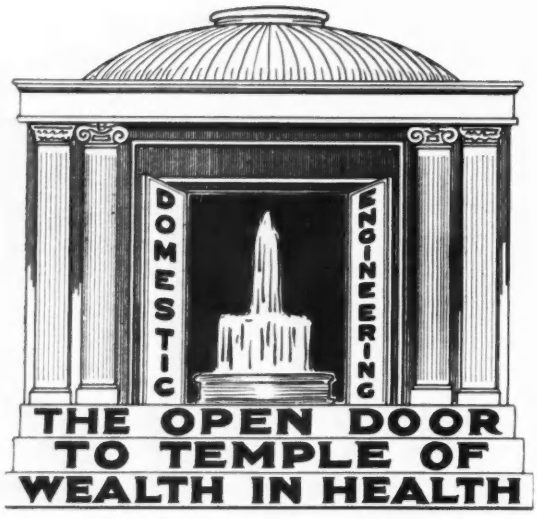
The production from the Mt. Lyell Copper Company in Australia is received here for treatment by Beer, Sondheimer & Company, but this is treated as smelter product; the output of the Ducktown Copper Company in Tennessee, owned by British interests, amounting to 6,000,000 lb. a year, is also sold here and included in the smelter product of the American Metal Company.

"Domestic Engineering" Cartoon on "The Danger of Under-Estimating."—XVII.


HI, HO. WHO WANTS TO BE A CUT-RATE PLUMBER ?
I SEEM TO HAVE SUCH HARD LUCK WITH MY JOBS
WE ALWAYS HAVE A NICE REST WITH THIS MASTER DRIVING.
SAY, MISTER, IF YOU USE THIS PLANK YOU CAN SOON GET OUT OF THAT DITCH
CUT-RATE-JUNK PLUMBING CO
DOMESTIC ENGINEERING
"DOMESTIC ENGINEERING"

Too Bad He Got in the Mire, but There is a Way of Escape.

We are receiving requests from readers for reprints of these cartoons for framing. We will forward extra copies to subscribers for "Domestic Engineering" upon request.



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NOTICE TO ADVERTISERS.

Copy and cuts for advertisements intended for a particular issue should reach the office of Domestic Engineering on Monday of the previous week if it is desired that a proof of the advertisement shall be submitted. New advertisements can be received up to noon of Monday of the week of issue, but no proof can be shown.

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Member of the Federation of the Trade Press Associations of the United States.

SPECIAL NOTICE TO READERS.

Our readers are invited to send in articles on any topics covering sanitary interests as outlined above. Photographs and drawings with descriptions of special interest to plumbers and steam-fitters are welcomed. "Domestic Engineering" pays at space rates for all articles, notes, criticisms and news data so contributed.

Among the Wholesalers

MATTHEW KENNEDY DEAD.

Matthew Kennedy, treasurer of the Kennedy Valve Manufacturing Co., Elmira, N. Y., died at his home in that city on Saturday, November 26, according to official announcement just received from the Kennedy company's general offices.

WILL MAKE PLUMBING AND HEATING GOODS.

W. A. Nairn, Inc., Jersey City, N. J., has been incorporated with a capital of $50,000 to manufacture plumbing and heating goods. The incorporators are: Walter A. Nairn, 642 Montgomery St.; William Reilly and Roy S. Tinney, 568 Newark Ave., all of Jersey City, N. J.

INCREASES ITS CAPITAL STOCK.

The Milwaukee Seat & Tank Co., Milwaukee, Wis., has filed an amendment to its articles of incorporation, increasing its capital stock. The increase in capitalization has been made necessary by the company's extensive growth of the past year, the plant having been greatly enlarged and several new departments added to take care of the growing demand for its product.

THE ANNUAL MEETING OF SUPREME FOLD OF U. B. S. POSTPONED TILL MARCH, 1911.

The meeting of the Supreme Fold of the United Bunch of Sheep of America, which was to have been held in Chicago December 17, has been postponed until the first Friday in March. This action was taken shortly before the time of the original meeting-time, owing to the fact that a majority of the members are at present in the midst of their busiest season and could not get away conveniently. The Milwaukee Home Fold No. 1 will hold its regular election on the first Friday in January. At the December meeting the regular tickets were nominated and at the coming election several spirited contests are expected.

"DOMESTIC ENGINEERING'S" CARTOON SAID TO HAVE BEEN POET'S INSPIRATION.

The John Douglas Co.'s Pacific Coast office at 571 Mission St., San Francisco, Cal., has just mailed the plumbing trade on the coast a most attractively-printed postal-card bearing the following legend:

The Best Is Cheapest.

"'Knowledge comes, but wisdom lingers,'
'Tis a truth the poet sings;
And the plumber's crown of sorrow
Is in buying worthless things.
Heed our words then,
Ere you learn it,
Ere your purse be put to test,
Buy your fixtures all from 'Douglas,'
Largest makers of the best."

There be those who claim that the poet derived his inspiration from "Domestic Engineering's" cartoon, entitled "The Junk That Stayed at the Junction," but we are unable to decide whether that is so or not.

STANDARD SANITARY NEW CLOSETS FITTED WITH NEVER-SPLIT SEATS.

Health and cleanliness have come to be important factors and manufacturers and jobbers are compelled to live up to the high standard insisted upon by the public. People have come to that point where they demand the best in bath-room fixtures. They insist upon having fixtures

that are sanitary not only in name and reputation but in fact.

This demand is particularly true of closets in public buildings and in private residences. Builders have recognized it and germ-proof closet-seats are being installed upon every hand. The seats manufactured by the Never-Split Seat Co., of Evansville, Ind., are being furnished to sanitary-ware manufacturers and to jobbers and plumbers throughout this country and in foreign lands.

A noteworthy example is furnished in the recent placing on the market of a new automatic closet by the Standard Sanitary Manufacturing Co., of Pittsburgh. The Never-Split Seat Co. was awarded the contract for making a special seat for this new product. These seats are demanded because they are absolutely germ-proof. They are well made, the sections being not only glued together but grooved and held in place by strong bolts, dampness having no effect on them.

TRADE LITERATURE.

"What It Means to Be Clean" is the title of a neat little brochure sent out by the McCrum-Howell Co., New York City. Boiled down, its message is that life without a vacuum is a void. It is full of pithy statements that would make good pointers for a selling talk by plumbers to prospective customers. Says the booklet: "Vacuum-cleaning is not a luxury—it is a convenience. Vacuum-cleaning is not an expense—it is a profitable investment. Vacuum-cleaning saves lives—it saves time—it saves money." Our readers should take note that this book is addressed to the Great Unwashed Public and at the end of the work it says in bold type, "Ask Your Plumber or Steamfitter." You see the drift, of course. We knew you would. It is the commencement of an active campaign of education. So that you may understand the matter fully, write for a booklet today and mention the Golden One so that the company may know who brought the subject to your notice.

What is termed by the givers "The 'Gaco' Delineator" might have been aptly termed a panacea for drawing ills. What is it like? We can't describe it. We only know that it is the slickest thing we have seen in print for years. We are going to use it to do some fancy work in the "Domestic Engineering" cartoons next year. Anybody with a hand, an eye, a piece of paper and a lead pencil can draw anything from a cross-section of an Irish stew to a front elevation of a dog's hind leg. This is our way of saying that it is a delineator to the limit. You positively must write for one. It is too good to miss. If your curiosity is excited (and it should be) the "Gaco" delineator will be mailed to you free upon request to the Pittsburgh Gage & Supply Co., Pittsburg, Pa. Start this way "In the Golden One I See," etc. You'll get it then for sure.

IRA BUDD PASSES AWAY.

Ira Budd, one of the leading master plumbers in Newark, N. J., died at his home in that city on Wednesday, Dec. 14, after ten months' illness, in his 49th year. He was born in that city, Dec. 3, 1862, and educated in its public schools. After having learned the plumbing trade he started in business in 1883 with his brother under the firm name of J. Budd & Bro. The partnership lasted till 1888 when Ira Budd withdrew and opened a business under his own name at 297 Orange Ave., Newark, which he continued with more than ordinary success until his death. Writing about Mr. Budd's demise, his friend, H. F. Baillet, secretary of the New Jersey State Association of Master Plumbers, says:

"Ira Budd was one of the tried and trusted supports of the Newark association. The same traits that won for him success in business life and advancement in civic and political circles, made him one of the most valuable members in the local, state and national associations of master plumbers. Absolute honesty of thought, word and action; painstaking effort to fulfill every trust reposed in him; open-handed and open-hearted, modest and self-effacing, when such seemed the best for the general interest, ever ready to respond to the call for his services regarding such call as a duty to be conscientiously fulfilled, made him one whose aid and counsel were sought and looked up to by his associates in business and civil life. A good husband and kind parent, a faithful friend and servant among us, his influence will live long among us all.

"He was in the very vigor of prosperous manhood when fell disease overtook him. Connected with the Newark Master Plumbers' association since its beginning he served successively as its secretary, vice-president, and as its president for three years. Since then, almost continuously on its most important committees. He also served the New Jersey State Association as its first president and since then on various committees. He was for a term of years National state vice-president for New Jersey and represented his local repeatedly at National conventions, where his services were generally in demand.

"In the civic life of his home city he was continuously active having served in various capacities for his party and the people, as a member of the Board of chosen free-

297 SOUTH ORANGE AVENUE
Newark N J April 20th 1901

Domestic Engineering

Dear Sirs: — I was born in Newark N J Dec 3 - 1862 and was educated in the Public School in that City I learned my trade in the City of Newark N J working for the firm of J. W. Bonnell & Son & Howell & Bro I started in Business in 1883 with my Bro under the firm of J. Budd & Bro. was in said firm until 1888 at which time I withdrew and engaged in Business for myself and have been interested ~~—~~ in the Trade ever since

Now that our friend, Ira Budd, is dead, it is quite interesting to see and read the above autobiography in his own handwriting, which he sent us at our request nearly ten years ago, or to be exact, on April 20, 1901.

holders of Essex county, and at the time of his death as a member of the Board of Street and Water Commissioners of the city of Newark, where his peculiar training and personal qualities proved him a most valuable public servant.

"He has passed from among us, but his genial personality and kind helpfulness can never be forgotten among those who had the privilege of calling him friend and of living in touch with his various activities.

"His funeral was attended by the city officials, by the Masonic lodge of his choice, who conducted the services at the grave, by his immediate associates in the Board of Works, city employees and a host of citizens. A very large delegation of master plumbers, including National President A. S. Walker and Secretary S. F. Wilson, and all the past-presidents of the state association attended in a body."

"IF ONLY I COULD DRAW."

There are only a few people in the business world who have not said that many times in their career. The few are those who can. Every plumber who is striving to do the best work and place it before those who are interested in the best possible way needs some facility with the pencil. Lots of people never try to learn. Correspondence courses do not appeal to them. They have not the time to be tied down by a series of lessons. "If there were only a short-cut scheme to enable me to do all the drawing that I need in my business so that I could dig right at that thing any time that I wanted, that would hit me right," said one struggling plumber to us the other day. He had our sympathy, but we could not suggest at that time the best source of help. Now we have it. "Mechanical Drawing for Plumbers" has just been issued by the Norman W. Henley Publishing Co., 132 Nassau St., New York City. This valuable treatise has for its author R. M. Starbuck, of plumbing fame to most of our readers. Twenty-six chapters treat of all possible uses of a ready pencil, scientifically guided to the varieties of plumbing work. The book has 150 specially-made engravings. The price of this excellent addition to the literature of the trade is only $1.50, postage prepaid. You can get it from the Book Department of "Domestic Engineering."

PACIFIC COAST LETTER

The November building record in San Francisco was an extremely poor one, and it is likely that December will also make a rather poor showing. The local plumbing firms, however, feel that they have more ground for encouragement than for a long time past. Naturally much depends on the decision as to whether San Francisco is to get the Panama-Pacific Exposition. If it is definitely assured that this event will be held here, it is practically certain that building will be resumed on a larger scale by next spring or before. Leaving the Exposition out of consideration, however, a substantial volume of new work is already coming out, with prospects of a great deal more after the first of the year, and several large contracts will almost certainly be closed before that time. Jobs as large as that on the Hearst building, or the San Francisco Hospital, do not come very frequently, but there is a great deal of important work in view on schools and other public buildings, as well as hotels, clubs and lodges.

The largest contract let this week was for plumbing in the new Lowell High School, to V. J. Belknap on a bid of $13,891. A vacuum-cleaning plant will also be installed in this building by the Pacific States Sales Company for $985. Most of the other bids for this building, including that of the John G. Sutton Co. for heating and ventilating, for $29,427, were rejected as too high. The large Masonic Temple contract is likely to come out at any time, and figures are being taken on a number of other schools, in addition to quite a lot of hotel buildings. General contracts have been let on the large hotel for the Davis Estate at Sutter and Kearny streets, and the plumbing work will probably be given out in a few days. Some of the largest prospective jobs in view are the six-story Terminal Hotel on lower Market street, and the new Alcazar Theater on O'Farrell street, both of which are expected soon after the first of the year.

Local plumbers are taking a keen interest in plans for the new Oakland city hall, to be started next year, at a cost of about $1,000,000. Complete plans and specifications have arrived, and the board of works is losing no time in calling for figures.

J. Looney, San Francisco, has just taken a plumbing contract amounting to $1,357, for a three-story building for the Sisters of the Presentation, at the corner of Turk street and Masonic avenue.

Notwithstanding the quiet conditions locally, the supply dealers and manufacturers' agents express great satisfaction with the volume of fall business. The activity is principally in the country towns, where an unusual amount of building has been in progress, and the plumbing installed in the smaller towns is of a better class than ever before. Jobbers at Sacramento are getting a large proportion of the Valley trade, and in the line of pipe are probably cutting into the business of the San Francisco dealers. In plumbing fixtures and sanitary accessories, however, local firms report that the increase of business has been sufficient to give them as well as the Sacramento houses about all they care to handle. While work on country schools has been an important item, school building seems only to have begun in the outside towns, a large number of new plans being announced since the first of the month. Contracts will soon be let for a heating and ventilating system in a new grammar school at El Centro, Cal., including an air-washing device, blower and motor. The city of San Diego will issue bonds to build a $200,000 polytechnic school building, and four new schools, to cost $250,000 each, besides a number of other buildings of a similar nature, are planned for Los Angeles. The city of Santa Monica is also planning a $200,000 polytechnic school. Plans are also being made for a $75,000 children's hospital at Los Angeles, and a contract will shortly be awarded for remodeling the steam-heating system in the East Side Jail in that city. Another large building in prospect is a $250,000 Masonic temple at Sacramento, Cal.

The Grand Jury at Sacramento, Cal., which has been examining witnesses regarding an alleged illegal "trust" among the plumbers and supply dealers of that city, has finished its consideration of the matter, deciding that there was no adequate evidence to show the existence of an illegal combine in restraint of trade.

The Delanoy Manufacturing Co. has taken a step contemplated for some time in closing the San Francisco store on Second street, moving the stock carried there back to Oakland.

The Geo. H. Tay Company, by rushing work on the equipment of its new branch in Oakland, has been able to occupy the place this week, and is now open for business at that place.

W. C. Chamberlain, Pacific Coast manager for the Standard Sanitary Manufacturing Company, left Dec. 15, for a well-earned vacation at his home in Boston. The favorable impression Mr. Chamberlain has made on the Coast trade during the short time he has been in charge of the office here is a matter of great satisfaction to his friends here.

E. A. Keithley, of the E. A. Keithley Company, representing the United States Sanitary Manufacturing Co., the Potteries Selling Co. and others, has just returned from a trip through the Northwest.

J. L. E. Firmin, secretary of the Association of Master Plumbers of San Francisco, spent the early part of the week calling on the officers of the Los Angeles Association.

Joseph Thieben, Pacific Coast agent for the Pittsburg Water Heater Co., reports an excellent business throughout his territory, with constantly increasing sales of large lots of heaters for apartment houses, etc. He has just received an order for 20 heaters of the new Bungalow type for one apartment house in Oakland. The Oakland territory, which was for a time covered by Scott & Thieben, is now handled by a branch of the Joseph Thieben Co.

A. Dellamore, Los Angeles, has just completed roughing in the largest plumbing job ever undertaken in that city, the $60,000 contract for the Alexandria Hotel annex. The installation required 101,000 ft. of pipe, from 8-in. to ½-in. The work was done in 100 working days, being greatly facilitated by the complete equipment of Mr. Dellamore's shop. The plumbing fixtures, yet to be installed, will be of the most elegant type, many of the bathrooms representing an expenditure of about $1,000 each. Bathtubs, lavatories, etc., will be finished in gold plate, harmonizing with the decorative work of the rooms, and all fixtures will be of solid porcelain.

PLUMBING BUSINESS DISORGANIZED IN LEOMINSTER, MASS.

The town of Leonminster, Mass., occupies a peculiar position. Over two years ago a justice of the Leonminster court handed down a decision by which the plumbing regulations and by-laws under which the town was acting, were made ineffective. The board of health and others realizing after the court decision that the town was at the mercy of the plumbers sought to have legislation enacted by the state that would protect Leominster and other towns in a similar predicament. After a bitter fight which lasted for a full year Representative Frank H. Pope succeeded in having a law enacted, which when approved by the town, gave Leominster the right to make and enforce plumbing regulations.

After the bill had been enacted into law the board of health and other officials who had most strongly advocated it became inactive and as yet no move has been taken to give the town protection under its provisions. The health officials say they have received no complaints and declare that if the people of the town are satisfied there is no reason that any change should be made.

Now the plumbers themselves are taking the matter up. They are tired, they say, of the leeway which they and their competitors are given in the slighting of jobs. Out-of-town contractors cut a corner wherever it is possible, oftentimes, and in order to compete with them the local men are obliged to do work which they admit is far from what it should be.

PREPARING NEW PLUMBING ORDINANCE FOR BAR HARBOR, ME.

An ordinance providing for the examination and licensing of master and journeymen plumbers, is being prepared by the sanitary committee of the city council at Bar Harbor, Me., and is likely to be adopted in some form or other. As outlined at present the measure provides for a board of examiners to be composed of the health officer, the inspector of buildings and three members to be appointed by the mayor, the latter to receive $5 a day when on duty. All plumbers will be required to file applications with the secretary of the board and be examined once a year for a license. Master plumbers will be obliged to pay an annual fee of $25 and journeymen $5.

NEW BUSINESS VENTURES.

James A. Jones, Oconomowoc, Wis., who recently sold his hardware business on Milwaukee street, has opened a plumbing and heating business on Silver Lake street in Oconomowoc, Wis.

R. T. Fleek will open a plumbing establishment in Libby, Mont., on Jan. 1, 1911.

The Gloeckner-Melville Plumbing Co., St. Louis, Mo., has been incorporated by Frank W. Gloeckner, Alex B. Melville and Emil H. Hoeber, all of St. Louis.

J. M. Kirschbaum & Co. have opened a plumbing business in the North-Side Glass block, St. James, Minn.

F. W. Tyler, Lincoln, Neb., has secured the contract for plumbing and heating the municipal lighting plant in that city. Consideration $2,577.

CONTRACTS AWARDED.

Davis & Miller, Aberdeen, Wash., have been awarded the contract for the installation of heating and plumbing systems in the Lumberman's Bank building at Hoquiam, Wash. The consideration is $2,455.50.

W. O. Cargill, 252 South Division St., Grand Rapids, Mich., has secured the contract for the installation of a vacuum-cleaning system in the Travis residence on Morris avenue in that city.

Plumbing contracts recently let at Bridgeport, Conn., include the following: to A. E. Roberts, plumbing and heating two-family house for Samuel Glasner on Washington street; to W. K. Sherwood, plumbing and heating new residence being erected on Alpine street for Miss H. D. Raymond; to Carlson & Benson, plumbing and heating in two houses on Fairfield avenue for Soderholm & Swanson.

M. J. Daly & Son, Inc., Waterbury, Conn., has the contract for the plumbing and heating of a nine-room residence which is being erected on Hewitt street in that city for A. I. Chatfield.

Work has been started on an eight-story office and apartment block at the corner of Park and Congress streets, Portland, Me. The building is to be modern in all its details, with steel girders and concrete floors and each apartment to have steam heat, telephone and electric light equipment, gas, and hot and cold-water supply, and bath room. Harry G. Fuller, Portland, has the contract for the plumbing.

The Barlow Brothers Co., Waterbury, Conn., has recently been awarded the following contracts: Plumbing and heating in G. L. Dexter's residence on Euclid avenue; plumbing and heating in W. P. Lamb's residence on the same street; plumbing and heating Harry Beardsley's house, also on Euclid avenue; plumbing the new addition to the Westover school; plumbing in Charles Holmes' residence on the Middletown road; plumbing and heating in T. A. Delowry's new house, on Putnam street; and similar work in Mrs. G. H. Clowes' new house on Euclid avenue, all in the city of Waterbury.

Tom Sweeney, Rapid City, S. D., has been awarded the contract for the plumbing and heating in the new First National building at Custer City, S. D.

The Coalinga Tank & Plumbing Co., Coalinga, Cal., has secured the contract for the plumbing in the Bertrich building in that town. Consideration $2,450.

To The Trade:-

We are prepared to give you the utmost value in heating requirements.

Our boilers are the Capitol, Furman, Sun and Solar in both round and square.

In radiators we can furnish every height, kind or shape needed, either slip nipple or screw nipple construction.

Every specialty needed for a heating plant can be supplied by us.

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Classified Advertisements

Advertisements under this heading 4 cents per word per issue, address included. Remittance to be made with order. To insure insertion copy should be received not later than Wednesday morning.

Situations Wanted

SITUATION WANTED—FIRST CLASS specialty salesman who has had ten years' experience calling on the plumbing and heating trade in the State of Minnesota, Wisconsin, Illinois, Indiana, Iowa, North and South Dakota, desires to make change January 1st. Address No. 480, "Domestic Engineering," Chicago.

SITUATION WANTED—BY A FIRST-class foreman, estimator and draftsman in plumbing, heating and ventilation, with 25 years' experience; can show good results, and give good references if wanted. Address No. 485, "Domestic Engineering," Chicago.

WANTED—POSITION AS BOOKKEEPER with a large plumbing establishment. Understand plumbing business. First-class references. Chicago preferred. Address No. 524, "Domestic Engineering," Chicago.

SITUATION WANTED — BY FIRST-class specialty salesman. Have had several years' experience; can show results; give best of references; sober, married and willing worker. Address No. 525, "Domestic Engineering," Chicago.

WANTED—POSITION AS BUYER AND Sales Manager or Branch Manager in wholesale plumbing and heating supply line, by man now employed in similar position on the Pacific Coast. Prefer eastern city. Address No. 526, "Domestic Engineering," 325 Dearborn St., Chicago.

POSITION WANTED—BY TRAVELING Salesman with 10 years' experience and acquaintance with plumbing and heating trade on Pacific Coast. A line of agencies. Commission basis. Address No. 530, "Domestic Engineering," Chicago.

NOTICE TO MANUFACTURERS OF Heating Apparatus—Valves and Specialties. A salesman with large following among Jobbers and the Trade would consider a proposition giving him a better future. Address No. 492, "Domestic Engineering," Chicago, Ill.

Help Wanted.

WANTED—A YOUNG MAN TO CALL on architects, New York City and vicinity, plumbing fixtures; give experience; state salary. Address No. 487, "Domestic Engineering," Chicago.

WANTED—A YOUNG MAN IN A plumbing supply house, New York City, for store salesman; one capable of figuring, estimator. Address No. 488, "Domestic Engineering," Chicago.

WANTED—A HEATING ENGINEER who has had practical experience and competent to take charge as foreman of a first class shop in a city of two hundred thousand population. Address No. 489, "Domestic Engineering," Chicago.

WANTED — SALESMAN FOR THE state of Illinois, Indiana, Western Ohio, Southern Michigan and Wisconsin to handle high-class plumbing supplies. Must have experience on road and good acquaintance with trade. In applying, give age, whether have covered this territory and all necessary references. Only a first-class man will be considered. Address No. 481, "Domestic Engineering," Chicago.

WANTED—SALESMEN ON COMMISsion basis to handle high-class plumbing supplies in the New England states, New York City, Pennsylvania, all of the southern states east of the Mississippi and south of the Ohio River. Prefer salesman now calling on the trade. Address No. 482, "Domestic Engineering," Chicago.

WANTED—YOUNG MAN WITH EXperience in preparing advertising copy for the plumbing and heating trade. Address, giving full particulars, No. 471, "Domestic Engineering," Chicago.

For Sale

FOR SALE—PLUMBING,HEATING AND tinning business, also general hardware, at inventory; town of considerable size; books show best trade in city. Address No. 528, "Domestic Engineering," Chicago.

FOR SALE—THE OLDEST PLUMBING, Tinning and Heating establishment in town of 6,000 population, located in southern New York. Address No. 531, Domestic Engineering," Chicago.

FOR SALE—HALF INTEREST IN plumbing and heating business; prosperous town of eighteen thousand. For particulars address No. 517, "Domestic Engineering," Chicago.

Miscellaneous.

TO STEAM & HOT WATER HEATER manufacturers, also RADIATOR manufacturers and supplies. I desire to get a line of steam and hot water heaters to sell in Pennsylvania, and adjacent territory. Commission preferred to salary. Same for Radiators and Supplies. Six years with present employers. Address No. 491, "Domestic Engineering," Chicago.

WANTED—PARTNER WITH A SMALL amount of capital to take an interest in an established heating and plumbing business. Address No. 520, "Domestic Engineering," Chicago.

WANTED—NEW SIDE LINES TO INtroduce to plumbing and heating trades in the west. Commission basis on first-class specialties. Can make good. Address 516, "Domestic Engineering," Chicago.

MANUFACTURERS—IF YOU HAVE A specialty of merit to introduce in the western trade, in the heating and plumbing line or in connection with the building line, we are prepared to take your agency, having thorough acquaintance with the trade. Address No. 508, "Domestic Engineering," Chicago.

Government Proposals.

TREASURY DEPARTMENT, Office of Supervising Architect, Washington, D. C., December 16, 1910. SEALED PROPOSALS will be received in this office until 3 o'clock, p. m., on the 25th day of January, 1911, and then opened, for the construction complete, (including plumbing, gas piping, heating apparatus, electric conduits and wiring), of the United States Post Office at Stevens Point, Wisconsin, in accordance with drawings and specifications, copies of which may be obtained from the custodian of site at Stevens Point, Wisconsin, or at this office, at the discretion of the Supervising Architect.

JAMES KNOX TAYLOR,
Supervising Architect.

Plumbing Schools

LEARN PLUMBING ON NEW BUILDings in four months. Tools furnished. Master Plumbers' Trade School. 3659 Finney Ave., St. Louis, Mo.

GOODS TO MANUFACTURE.

Parties having saleable specialties which they desire to have manufactured or marketed are invited to submit particulars. Address No. 333, "Domestic Engineering," Chicago.

WE PUBLISH:

A COMPLETE GUIDE TO TESTING PLUMBING. A full treatise showing the necessity of testing new and old work; methods of testing fully described; 7½ x 5¼ in.; seventeen illustrations. Postpaid, 25 cents.

DEAN'S SYSTEM OF GREENHOUSE HEATING by steam or hot water; used for years; convenient and reliable; makes greenhouse heating estimating very simple. Flexible cloth bound, 5½x7¾ in., 46 pp. Postpaid, $2.00.

MAKING THE BUSINESS PAY. Letters of John Burton, retired successful plumber and steamfitter, to his nephew still in business. Practical, instructive, entertaining, a guide to better business. Cloth bound, 5½x7¾ in.; 168 pp. Postpaid, $1.00.

SWIMMING POOLS. Their construction; cold and hot water supply; various methods of heating the water; directions as to selecting correct sizes of heaters. A practical guide to the subject. Over thirty illustrations; 6¼x4¾ inches. Postpaid, 50 cents.

SIZE OF FLOW AND RETURN STEAM MAINS. Contributions from thirty heating engineers of different cities in United States, giving current practice; full of practical advice and useful tables. Bound in boards, 6¼x4¼ in., 104 pp. Postpaid, 50 cents.

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SANITATION IN THE MODERN HOME. An invaluable guide to the architect, plumber, heating engineer and house owner, telling just what is necessary to make a home completely sanitary from the subsoil to the roof. 8x5¼ in.; 272 pp.; bound in cloth. Postpaid, $2.00.

SANITARY SEWERAGE OF BUILDINGS. An authoritative statement of the principles and practice of sewering buildings, including the design and construction of plumbing systems, disposal of sewage in unsewered localities, etc. 8x5 in.; bound in cloth; 209 pp. Postpaid, $1.50.

ROUGHING-IN HOUSE DRAINS. A complete guide to the work of roughing-in plumbing, from the digging of the sewer to the finishing length of the soil and vent stacks, giving each step to be taken and telling how and why it is done. 6¼x4¼ in.; 184 pp.; bound in boards. Postpaid, 50 cents.

PLUMBING CATECHISM. Second edition. This book formulates, in question and answer form, the basic principles of plumbing design and practice. It is therefore especially commended to students in engineering and trade schools, and to master and journeymen plumbers, preparing for examinations. Bound in cloth, 6¾x4¾ in.; 125 pp. Postpaid, $1.00.

NOTES ON HEATING AND VENTILATION. Second edition. This book is a resume of lectures delivered to classes in heating and ventilation at the University of Michigan. It is written primarily for the steamfitter and designer of heating systems. Reduced to as brief a form as possible, so that readers can readily find notes or data desired. Bound in cloth, 6¾x4⅜ inches; 272 pp.; postpaid, $2.00.

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